IMAGING SYSTEM
USER MANUAL

Version 2.0
February 1998

Department of Veterans Affairs
VIST**A** Software Development
Technical Services

Preface

The purpose of this manual is to provide users with instructions on using the **V***IST***A** Imaging System V. 2.0 software and system components. It includes explanations of the controls on the **V***IST***A** Imaging windows and instructions on performance of various clinical tasks.

The **V***IST***A** Imaging System V. 2.0 User Manual is a member of a suite of documents that include the Installation Manual, Security Guide, Technical Manual, and Release Notes.

This manual also contains information about the options that comprise the **V***IST***A** Imaging System V. 2.0. Information about the various components such as servers, workstations, and background processors can be found in the Installation Guide.

This document is also available at the following Web address:

    http://vaww.va.gov/vhacio/imaging

The managers of http://www.va.gov/ are planning to add this and other **V***IST***A** Imaging V. 2.0 documentation to the following Web address:

    http://152.128.2.7/vista/softserv/clin_nar.row/imaging/index.html

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Chapter 1 Introduction

1.1 Functional Description

The **V***IST***A** Imaging System V.2.0 is an extension to the <u>V</u>eterans Health <u>I</u>nformation <u>S</u>ystem <u>T</u>echnology <u>A</u>rchitecture (**V***IST***A**) that captures clinical images, scanned documents, electrocardiogram (EKG) waveforms and other non-textual data files, and makes them part of the patient's electronic medical record. Image and text data are provided in an integrated manner that facilitates the clinician's task of correlating the data and making patient care decisions in a timely and accurate manner.

The system is designed to...

- Provide the treating physician with a complete view of patient data and, at the same time...

- Allow consulting physicians to have access to the image and text data.

It serves as a tool to aid communication and consultation among physicians -- whether in the same department, in different medical services, or at different sites.

The **V***IST***A** Imaging System V. 2.0 is unique in that management of the medical images is an integral part of a hospital information system. Imaging workstations, located throughout the hospital, capture and display a wide variety of medical images including:

- cardiology
- bronchoscopy
- GI endoscopy
- hematology
- surgical pathology
- surgery
- dermatology
- radiology images

The **V***IST***A** Imaging System V. 2.0 can be used to capture many types of images associated with a wide variety of procedures and examinations. The Imaging System V. 2.0 has been extremely helpful to a number of services. Some use the imaging workstation during every case; others use it for selective cases. It serves four (4) important purposes:

- documents findings
- makes images accessible to clinicians within the hospital
- assists in conference decision making and education

- aids in follow-up treatment of patients

In general, between three and ten images are collected per procedure. Some procedures lend themselves to predefinition of standard views to be recorded. In other cases, images are recorded to document abnormal or unusual findings.

Many lesions are difficult to describe in words. As a result, terminology is not standard, and detailed description requires time; it is also subjective. For example, there are many kinds of ulcers. An image provides a more accurate representation of the kind of ulcer, including its size, appearance, and relationship to surrounding structures. Even quantitative estimates (e.g., 75-90% occlusion of a vessel) do not compare to an image in effectively conveying the urgency of the situation.

Once images are captured, they are accessible within the medical center at all times. Traditional methods of storage (i.e., videotape, 35 mm film, or glass slides) require access to tape storage areas and viewing devices. Erased or missing tapes are a common problem. In addition to the setup time, videotape or film storage media requires more physician time to locate the pathology for a particular patient. Captured images are associated with the text report of the procedure and are stored on the network for distribution throughout the institution. Images are available immediately after collection to pathologists, surgeons, radiologists, and primary care physicians. Requests for assistance in viewing cases may be decreased, although interest in the images has been seen to increase.

Many images are routinely reviewed during weekly conferences. At that time, pathology, radiology and other images are also generally available. The entire group can review all the images where everyone can see where the lesions exist. Often, decisions are made that could not otherwise be made. In some cases, the patient may be saved from a repeat procedure in the operating room.

Finally, the captured images are extremely helpful in follow-up care. Lesions that are being followed over time can be compared directly. If another physician performs the follow-up procedure, he or she has the benefit of the exact view that was seen previously. The effects of treatment can be examined objectively.
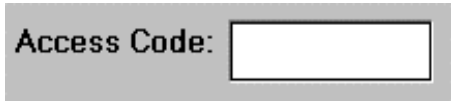
1.2 Orientation

1.2.1 Overview

The VA Users Guide to Computing is a general instructional guide for general computer usage. The VA Users Guide to Computing is a component of the VA Kernel package. It describes programming conventions common to all **V**ISTA national packages and is to be used as a reference source.

1.2.2 Navigation and Commands

The following conventions are used in this manual to describe the navigation and commands users perform in Imaging System V. 2.0 .

Convention	Description
Bold type	User Keyboard Entry
<RET>	Return key or Enter key
<SHIFT>	Shift key
<ESC>	Escape key
<NUM LOCK>	Top left key on the numeric keypad (above the 7) may also be labeled Numeric Lock; this makes any keypad key activate the number shown on its surface; it is the equivalent of a SHIFT LOCK for alphabetic keys.
Menu|Option |Suboption	This convention is used to explain a sequence of selections through a set of menus and/or options. For example, "Select Options|User Preferences from the **V**_IST_**A** Imaging System V. 2.0 window" would mean that you should go to the **V**_IST_**A** Imaging System V. 2.0 window, select the Options menu, then select the User Preferences option.
Text box	These are boxes into which you can type characters from your keyboard, such as the Access Code text box on the **V**_IST_**A** Sign-on Screen. Access Code: [ ]
Radio button	These are buttons that allow you to engage or disengage general options or preferences, such as the List Abstracts in Reverse Order radio button on the User Preferences menu. □ List Abstracts in Reverse order

Convention	Description
<CTRL-TAB>	Most windows in Imaging V. 2.0 have pop-up menus, such as the Image Listing window, that you can view by doing the following: Steps: 1. Hold the <Ctrl> button down and press the <Tab> key. 2. Use the arrow buttons to highlight an option on the pop-up menu 3. Press the <Enter> key to select the option.

1.2.3 Special Workstation Procedure: Restarting the Computer

The following procedure should <u>only</u> <u>be</u> <u>used</u> when a malfunction occurs that cannot be resolved any other way.

Command	Action
Reboot	1. Push the RESET button on the front of the workstation. 2. If there is no RESET button, power the workstation off and then on; the computer will reboot. 3. It will perform a virus check and load all required software; this takes about 30-60 seconds. 4. When the reboot process is complete, you should be able to sign back into the workstation.

1.2.4 Using a Mouse in the Microsoft Windows Operating System

The following section describes use of a two-button mouse with the Windows operating system. People with experience in using the Windows operating system may elect not to read this section. The term "control" refers to buttons, menus, pull-down lists, radio buttons, text-entry boxes, and other elements of a window.

Control	Description
Mouse button click	• The mouse is a device used to point at positions on the screen. • The mouse may have one, two, or three buttons. • The mouse should be held at the end opposite the cord so the fingers can press the buttons. • The buttons are referred to as the "**Right Mouse Button**", the "**Left Mouse Button**", and the "**Center Mouse Button**". When the mouse is rolled around on a flat surface, the arrow cursor on the screen will move correspondingly. • Pressing and releasing a button is called "**clicking**". You may position the arrow over a portion of the window, such as a button or scroll bar, and then click. This will cause the computer to do something such as display an image, depending on the window. • When the instructions tell you to "press the mouse button," you can assume that you are to press the **left** mouse button.
Double-click	In many cases, clicking the mouse over an object in an Imaging V. 2.0 window will **select** the object, but will not perform the command assigned to that object. In these cases: 1. Double-click the object by clicking the left mouse button over the object twice in quick succession. For example: If you click the mouse pointer over an exam in the Radiology Exam Listing window, Imaging V. 2.0 will select the exam, but will not display the image or image group associated with that exam. **Note: To see the image or image groups, double-click the mouse pointer over the exam associated with the image or image group that you want to view.**

Control	Description
Select	You may also **select** a rectangular area on the window, by following these steps: 1. Position the arrow cursor so it is over the left upper corner of the area to be selected. 2. Press the left mouse button down and hold it down while you move the mouse to the right lower corner of the rectangle to be selected. 3. Release the mouse button. You will see a dotted rectangle on the window around the area selected.
Right-click	Most windows in Imaging V. 2.0 have pop-up menus (e.g., the Image Listing window) that you can view by following these steps: 1. Click the right mouse button with the mouse pointer somewhere over the window. 2. Use the arrow buttons to highlight an option on the pop-up menu, and press the <Enter> key to select the option. 3. Or, use the mouse pointer to select the option, and click the left mouse button.
Drag	If you want to move a window to another area of the window (e.g., to see something on a window that is underneath), follow these steps: 1. Position the cursor over the top colored title area of the window to be moved. 2. Press the left mouse button down and move the mouse until the window is where you want it. 3. Release the mouse button. This is called "**dragging**" a window.
Drop-down menu	These are menus that display when a user clicks the mouse pointer over a menu name.

Control	Description
Cursor	• Also called a "mouse pointer," this is the graphic that moves along the desktop in response to movement of the mouse along the mouse pad, or by typing on the keyboard. • The cursor changes appearance depending on what commands the user can issue at the cursor's position on the desktop (e.g., the cursor looks like an arrow over menus, like a flashing vertical bar over word-processing fields, etc).
Shortcut keys	• These are single keys or keystrokes that allow users to issue commands from the keyboard that would otherwise require navigation through menus. • Many shortcut keys are combinations of keys (e.g., Alt-F4 refers to holding down one of the alt keys and pressing the F4 key). An underlined character on a menu option indicates that this character is a shortcut for the option.
Clipboard	A memory buffer that allows users to cut, copy, and paste data and objects among Windows programs.
< | >	You may adjust the size of the window by following these steps: 1. Place your mouse at the edge of the window that you would like to move. 2. When you see the cursor turn into a double ended arrow < | >, hold the left mouse button down and move the mouse until the image is the width and/or height that you desire. 3. Release the left mouse button.

1.3 New Features in Version 2.0

1.3.1 New Display Features

• Windows graphical user interface

• Ability to view multiple "screens" on the monitor at one time

• Ability to resize images that are displayed

• Ability to select number and layout of abstracts displayed

- Ability to save user preferences; these will be automatically used the next time the user logs in, regardless of what workstation is used

- Ability to display motion video clips, scanned documents

- Ability to modify the contrast and brightness of displayed images

- Ability to view images from another VA facility

1.3.2 New Capture Features

- Ability to capture from new image acquisition devices, such as TWAIN scanners, meteor capture board, Lumisys scanners, as well as Truevision AT- **V**IST**A** board

- Ability to use additional file formats (e.g.,.JPG, ...)

- Ability to import image (e.g., TGA, .JPG, .BMP, etc.) files from local drive

- Ability to add image descriptions using a windows text entry box

- Ability to enter long descriptions for images

1.4 Package Management

The images you will use are part of a patient's medical record. As such, they should not be erased or modified. Additionally, users and administrators of the Imaging V. 2.0 hardware/software should ensure that only authorized personnel use the Imaging V. 2.0 hardware/software or view the images therein.

1.5 Package Operation

The **V**IST**A** Imaging V. 2.0 Package will appear on your workstation on the Start Menu under Programs on your desktop. The package consists of two different user icons:

- An icon to display the patient's multimedia medical records including images
- An icon to capture images

Most clinical users will have access to the display program. Access to the capture program is restricted to those who perform procedures with image capture capability.

1.5.1 To activate a program

Step	Action	Result
1	Move your mouse until the cursor is over the icon for the program.	
2	Click twice on the left mouse button.	There will be a pause and then a window will open (the Imaging V. 2.0 window or the **V**_IST_**A** logon window, depending on your workstation setup)..

The user should enter an access and verify code in the **V**_IST_**A** logon window. If you have access privileges, the **V**_IST_**A** logon window will disappear and you will be able to use Imaging V. 2.0.

1.5.2 To start the **V**_IST_**A** Capture Program

- Click on the capture icon under **V**_IST_**A** Imaging V. 2.0 Programs on the Start Menu.

- To operate the capture program, your workstation must be set up properly. This includes:

  ❑ Correct installation of any hardware interfaces

  ❑ Proper configuring of initialization files that identify (to the software) the type(s) of capture being performed

Note: Further information about capture setup is included in the Imaging V. 2.0 Installation Guide.

- Users of **V**_IST_**A** can access the Winhelp file by pressing the F1 key while they are in an Imaging V. 2.0 session.

- Pressing the help buttons on the Imaging V. 2.0 windows will also launch the Winhelp version of this document.

1.6 Summary Notes for Specific Clinical Practices

1.6.1 Introduction

This section explains the specific points that Imaging V. 2.0 users from specific clinical practices need to consider.

1.6.2 Summary Notes for GI Users of Imaging V. 2.0

The **V***IST***A** Imaging System V. 2.0 has been extremely helpful in the gastroendoscopy laboratory. The Imaging System V. 2.0 is used routinely during upper endoscopies, colonoscopies, and flexible sigmoidoscopies. It serves four important purposes:

- Documents findings

- Makes images accessible to clinicians within the hospital

- Assists in conference decision making and education

- Aids in follow-up treatment of patients

The imaging workstation is a part of every GI endoscopy procedure. Approximately one third of procedures are abnormal, and approximately three images are captured during these procedures. Images are generally not captured during normal examinations.

Once images are captured, they are accessible within the medical center at all times. Traditional methods of storage, such as videotape, require access to tape storage areas and players. Erased or missing tapes are a common problem. In addition to the setup time, videotape storage media requires more physician time to locate the pathology for a particular patient.

Captured images are associated with the text report of the procedure and are stored on the network for distribution throughout the institution. Images are available immediately after collection to pathologists, surgeons, and primary care physicians. Requests for assistance in viewing cases are decreased.

GI lesions are often difficult to describe in words, because terminology is not standard, and detailed description requires time and is subjective. For example, there are many kinds of ulcers. An image provides a more accurate representation of the kind of ulcer, including its size, appearance and relationship to surrounding structures.

GI images are routinely reviewed during weekly surgical conferences. At that time, pathology, radiology and other images are generally available also. The entire group can go over all the images so everyone can see where the lesions are. Often

decisions are made that could not otherwise be made. In many cases, the patient is saved from a repeat endoscopy in the operating room.

Finally, the captured images are extremely helpful in follow-up care. Lesions that are being followed over time can be compared directly. If another physician performs the follow-up procedure, he or she has the benefit of the exact view, which was seen previously. The effects of treatment can be examined objectively.

1.6.3 Summary Notes for Cardiology Users of Imaging V. 2.0

The **V***ISTA* Imaging System V. 2.0 has been extremely helpful in the cardiology laboratories. It is routinely used during cardiac catheterization studies and echocardiography. It serves four important purposes: provides documentation of findings, makes images accessible to clinicians within the hospital, assists in conference decision making and education, and aids in follow-up treatment of patients. A predefined set of images are captured by a fellow or technologist, and these can be quickly reviewed by supervisors and fellow staff.

Lesions are often difficult to describe in words, because terminology is not standard, and detailed description requires time and is subjective. Even rough quantification may not convey the correct meaning or the sense of urgency, which an image provides. For example, a 75-90% occlusion describes a considerable range. An image provides a more accurate representation of the lesion, including its size, appearance, environment, and relationship to surrounding structures.

Once images are captured, they are accessible within the medical center at all times. Traditional methods of storage such as 35mm film or videotape require access to storage areas and specialized equipment. Erased or missing tapes and film are a common problem. In addition to the setup time, these types of media require more physician time to locate the pathology for a particular patient. Captured images are associated with the text report of the procedure and are stored on the network for distribution throughout the institution. Images are available immediately after collection to surgeons and primary care physicians. Requests for assistance in viewing cases are decreased.

Cardiology images can be routinely reviewed during weekly conferences. At that time, surgery, pathology, radiology, electrocardiogram and other images can generally be available also. The entire group can go over all the images where everyone can see where the lesions are. Often decisions can be made that could not otherwise be made.

Finally, the captured images are extremely helpful in follow-up care. Lesions that are being followed over time can be compared directly. If another physician performs the follow-up procedure, he or she has the benefit of the exact view that was seen previously. The effects of treatment can be examined objectively.

1.6.4 Summary Notes for General Medical Procedures Users of Imaging V. 2.0

The **V**_IST_**A** Imaging System V. 2.0 has been extremely helpful to a number of services. Some use the imaging workstation during every case, others use it for selective cases. It serves four important purposes: documents findings, makes images accessible to clinicians within the hospital, assists in conference decision making and education, and aids in follow-up treatment of patients.

A variety of medical specialties can be selected under medical procedures. These can be used for a wide variety of procedures that do not have a specific Medicine package module. The user can then use the Medicine package to create a report containing the procedure name, summary of results, indications, assessment and plan.

In general, between three and ten images are collected per procedure. Some procedures lend themselves to predefinition of standard views to be recorded. In other cases, images are recorded to document abnormal or unusual findings.

Many lesions are difficult to describe in words, because terminology is not standard, and detailed description requires time and is subjective. For example, there are many kinds of ulcers. An image provides a more accurate representation of the kind of ulcer, including its size, appearance and relationship to surrounding structures. Even quantitative estimates such as 75-90% occlusion of a vessel do not convey the urgency of the situation as well as the image does.

Once images are captured, they are accessible within the medical center at all times. Traditional methods of storage such as videotape, 35 mm film, or glass slides require access to tape storage areas and viewing devices. Erased or missing tapes are a common problem. In addition to the setup time, videotape or film storage media requires more physician time to locate the pathology for a particular patient. Captured images are associated with the text report of the procedure and are stored on the network for distribution throughout the institution. Images are available immediately after collection to pathologists, surgeons, radiologists and primary care physicians. Requests for assistance in viewing cases may be decreased, although interest in the images has been seen to increase.

Many images are routinely reviewed during weekly conferences. At that time, pathology, radiology and other images are generally available also. The entire group can go over all the images where everyone can see where the lesions are. Often decisions are made that could not otherwise be made. In some cases, the patient may be saved from a repeat procedure in the operating room.

Finally, the captured images are extremely helpful in follow-up care. Lesions that are being followed over time can be compared directly. If another physician

performs the follow-up procedure, he or she has the benefit of the exact view that was seen previously. The effects of treatment can be examined objectively.

1.6.5 Summary Notes for Anatomic Pathology Users of Imaging V. 2.0

Protocols can be agreed upon with surgeons to provide more useful treatment information. For example, during surgery, a series of images are captured showing the removal of a specimen with orienting anatomical details visible. Then the removed specimen is placed on a towel or paper. Where possible this is in the same orientation and near the site of removal to better orient the pathologist, and for such complex things as a Mohs technique frozen section, both the patient and specimen are marked with ink and photographed together. The operating rooms are linked with intercoms and when the pathologist receives the specimen and views the **V**_IST_**A** images, subtle questions and answers are passed back and forth from one team to the other. Interesting pathology can immediately be captured and "fed back" to the operating room.

The **V**_IST_**A** Imaging System V. 2.0 is an important tool for managing digitized images in anatomic pathology. The Imaging System V. 2.0 can be used to archive pathology images for distribution around your institution for professional and student education. Because of the large number of individual images present in a single glass slide, it is not cost-effective to replace an entire glass slide with a set of images. Rather, the anatomic pathologist should select individual views from a slide of interest, in order to demonstrate the diagnostic or other interesting features in a slide. With a properly installed interface between the microscope and the **V**_IST_**A** Imaging System V. 2.0 camera, suitable lighting, and good optics in the microscope, diagnostic-quality images can be captured. However, since all the images on a slide cannot be captured cost-effectively, the slide must be kept as a reference. The captured image has the advantage that it does not fade over time.

Once the desired images have been captured by the anatomic pathologist, they are immediately appended to the patient's electronic record, and may be viewed by any person in the institution with an imaging workstation and access to that patient's record. This includes all the workstations within the anatomic pathology department (other attending pathologists, resident's room); all the clinical services with workstations (operating room, medicine, surgery, endoscopy, dermatology, bronchoscopy); and the institution's auditorium, where interdepartmental conferences are held.

The **V**_IST_**A** Imaging System V. 2.0 has been extremely helpful to the clinical services and is routinely used during endoscopies, cardiology procedures, and surgical procedures. It serves four important purposes: documents procedures, makes images accessible to clinicians within the hospital, assists in conference decision making and education, and aids in follow-up treatment of patients.

Pathology images are routinely reviewed during weekly tumor board conferences. At that time, pathology, surgery, endoscopy, radiology and other images are generally available also. The entire group can go over all the images so everyone can see where the lesions are.

It has been found that having images available on the system has increased the resident and staff interest in pathology and has improved communications.

1.6.6 Summary Notes for Surgery Users of Imaging V. 2.0

One of the most common reasons to photograph abnormal findings in a teaching institution is for subject related lectures and discussions with medical students and residents. Another need is to better document the physical examination for medical documentation purposes, which more effectively allows physicians who have not examined a patient before to appreciate subtle (but potentially important changes from a prior clinic visit. For several years in head and neck cancer clinics, I have recorded post operative/post radiation oral and laryngeal examinations on videotape for this purpose and it has helped to detect earlier recurrent disease. However, storage and retrieval of those tapes is a real challenge. The imaging workstation now makes such information almost immediately available throughout the hospital, including the operating room where a quick comparison between the intra-operative evaluation and the clinic exam can at times be helpful. Microscope exams of ears and eyes, ulcers in vascular or podiatry clinic, and GI endoscopy are a sampling of other uses.

Routinely now, we discuss cases in the Multi-Disciplinary Tumor conference with projected images stored on the **V***IST***A** system. (We no longer use a 35 mm projector.) We commonly project pertinent pictures of GI endoscopy, bronchoscopy, clinic exams, radiographs, etc. combined with intraoperative pictures, and histology.

Communication between the operating room and the pathologist has notably improved, especially in discussing frozen section examinations of specimen margins in complex cases.

During surgery, a series of images are captured showing the removal of a specimen with orienting anatomical details visible. Then the removed specimen is placed on a towel or paper. Where possible this is in the same orientation and near the site of removal to better orient the pathologist, and for such complex things as a Mohs technique frozen section, both the patient and specimen are marked with ink and photographed together. The operating rooms are linked with intercoms and when the pathologist receives the specimen and views the **V***IST***A** images, subtle questions and answers are passed back and forth from one team to the other. Interesting pathology can immediately be captured and "fed back" to the operating room.

Recently one of our staff captured a series of teaching slides from a very unusual case into the **V***IST***A** Imaging System V. 2.0.   Our Medical Media Service had 35 mm slides, generated directly from those **V***IST***A** images ready for him in order to discuss the case at the adjoining university hospital as he left the building that evening.

(Contributed by Dr. Robert Sawyer, Baltimore VAMC.)

1.6.7 Summary Notes for Radiology Users of Imaging V. 2.0

The **V***IST***A** Imaging System V. 2.0 provides a number of benefits to the radiology service. Clinicians often want to view films, even before radiological interpretation has been completed. There are often difficulties with films being borrowed, and then being unavailable for interpretation in the radiology department. The **V***IST***A** Imaging System will allow direct interface to systems such as PACS (Picture Archiving and Communications Systems) or DICOM 3.0 radiology devices (under development) for direct acquisition of digital images. Use of an x-ray laser scanner for film digitization is also supported. Imaging System V. 2.0 workstations allow modification of the contrast (window) and brightness (level) of the radiology image. This has been found to provide advantages in many cases in interpreting films.

The **V***IST***A** Imaging System V. 2.0 handles images from a variety of medical specialties. In some cases, it is helpful to view the pathology or the surgical view, either during the diagnostic process or to confirm impressions for difficult cases. The Imaging System V. 2.0 is commonly used during conferences. Several sites have plans to use Multimedia Mail for educational purposes across sites.

Higher resolution, 2k x 2k multimonitor displays are currently being integrated with the **V***IST***A** Imaging workstation to allow filmless diagnostic interpretation of images. These meet the standards for teleradiology diagnosis. This is extremely cost-effective when compared to commercial workstations costing many times this price.

1.7 A Word About Scanning Clinical Documents

Imaging V. 2.0 provides the capability to scan documents of various sorts. Annotated diagrams can be included along with the images from a procedure. If reports are produced outside of **V***IST***A**, they can be scanned into the system. Electrocardiograms, EEGs, or other printed procedure data can also be scanned, either as a black-and-white or color documents.

1.8 Legal Requirements

Image data should be afforded the same privacy and security protection as any other patient data. In some cases it is more sensitive, because the patient's identity may be easily recognized from the image. Access to image data requires a valid access and verify code and rights to specific menu options. Users should be sure to log off of workstations when they are done viewing or capturing images. Imaging V. 2.0 allows users to copy images from the system for the following purposes:

- Clinical care for the patient whose images are being downloaded

- Clinical care for other VA patients

- For use in approved research by VA Staff

- For approved teaching purposes by VA Staff

- For use in approved VA publications

A user will be asked to indicate the purpose and agree to protect patient privacy. The user will also be asked to remove any patient identifiers from the image before using it for the indicated purpose.

1.9 Security Measures

V*IST***A** Windows applications use menu option assignments to assign user access privileges. Within the Imaging V. 2.0 package, menu options are used for image display and image capture for each specialty. In addition, some functions are only available to Imaging V. 2.0 managers with the System Manager option.

Chapter 2 Starting and Connecting to Imaging V. 2.0

2.1 Requirements for System Access

To use **V***IST***A** Imaging V. 2.0, you must have:

- An access and verify code for the **V***IST***A** hospital information System.
- The **V***IST***A** Imaging V. 2.0 menu option (MAG WINDOWS).

In order to capture images, you must:

- Be assigned the appropriate security key.

2.2 Overview of System Operation

The **V***IST***A** Imaging V. 2.0 Package will appear on your workstation on the Start Menu under Programs on your desktop. The package consists of two different user icons:

- An icon to display patient's multimedia medical records including images
- An icon to capture images

Most clinical users will have access to the display program; access to the capture program is restricted to those who perform procedures with image capture capability.

To activate a program, follow these steps:

Step	Action	Result
1	- Click on the start button on the Windows 95 or Windows NT task bar. - Click on the Programs menu. - Click on the **V***IST***A** Imaging Programs menu. - Click on either the Imaging Capture or **V***IST***A** Imaging Display item to launch the program.	There will be a pause and then a window should open -- the Imaging V. 2.0 window or the **V***IST***A** logon window (depending on your workstation setup).
2	Enter an access and verify code	If you have access privileges, the

Step	Action	Result
	in the **V**_IST_**A** logon window.	**V**_IST_**A** logon window will disappear and you will be able to use Imaging V. 2.0.

The **V**_IST_**A** Capture Program is started by clicking on the capture icon under **V**_IST_**A** Imaging V. 2.0 Programs on the Start Menu. To operate the capture program, your workstation must be set up properly, which includes:

- Correct installation of any hardware interfaces.

- Proper configuring of initialization files to tell the software about the type(s) of capture being performed.

Further information about capture setup is included in the Imaging V. 2.0 installation manual.

Users of **V**_IST_**A** can access the Winhelp file by pressing the F1 key while they are in an Imaging V. 2.0 session. Pressing the help buttons on the Imaging V. 2.0 windows will also launch the Winhelp version of this document.

Chapter 3 Viewing Images for a Patient

3.1 Introduction

V*ISTA* Imaging V. 2.0 provides a multimedia medical record view of patient's data. Users may examine the patient's longitudinal visual chart, viewing images and procedure reports.

3.2 Selecting a Patient
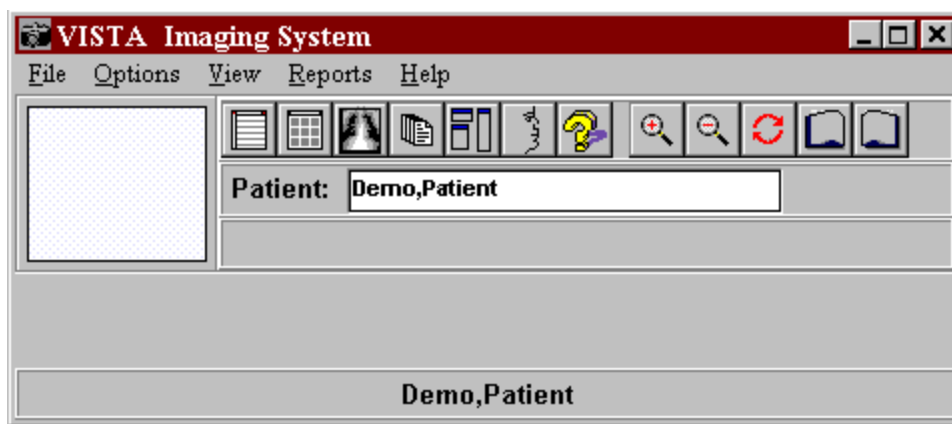
Enter the patient's name or id in the text box at the top of the main window. You may enter the patient's name in a number of ways:

- last name, first name (or initial part of last name)
- first initial of last name and last 4 digits of social security number
- Social Security Number
- Patient Location
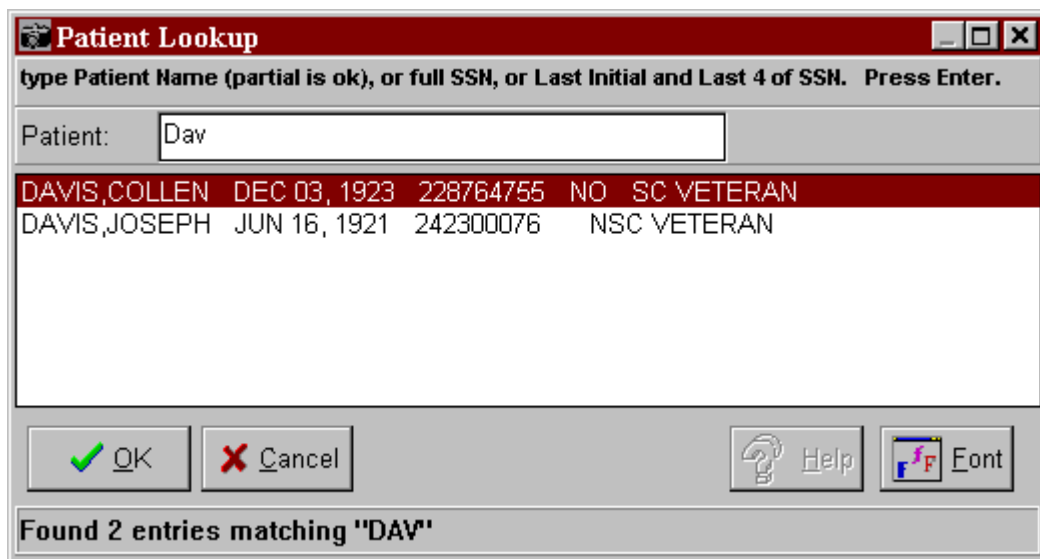
If there is more than one patient whose name and/or social security number matches that entered, a patient lookup window will appear. A list of all patients that match will be shown. You may select the correct entry in several ways:

Step	Action
1	Move the mouse until the cursor is over the name that is correct. (or) Use the <Tab> key until the first entry in the list is selected; then, use the down arrow key until the correct entry is highlighted.
2	Click once on the left-mouse button, and click on the OK button. (or) Double-click on the selected name.
3	Press the enter key or click on the OK button with the mouse.

Imaging V. 2.0 will display the Abstracts window, the Image Listing window, the Radiology Exam window, and/or images not resident on the jukebox, depending on the settings of the user preferences. For now, follow these steps:

Step	Action
1	Select the Options Menu.
2	Select the User Preferences option, making sure the Show Abstract Window and Show Image Listing Window boxes are checked.

Note: See Chapter 5 to learn how to set your user characteristics.

3.3 Selecting an Image

3.3.1 Selecting an Image From the Abstracts Window
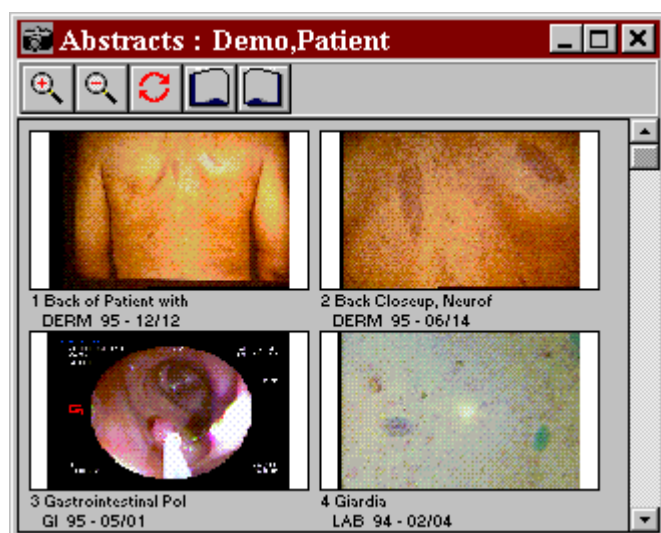
The abstracts window will display a small image abstract (or thumbnail image) for each image or group of images in the patient's record. Clicking on one of these reduced resolution images will cause the other image display window to open and show the full resolution image.

The abstract window may be configured by the user to show different numbers of abstracts horizontally and vertically. The size of the abstracts can be increased or decreased by clicking on the magnifying glass icons identified with "+" or "-".

If the patient has more images than can be shown at one time, the paging buttons will be enabled. Clicking on these buttons will display the next or previous page of image abstracts.

3.3.2 Selecting an Image From the Image Listing
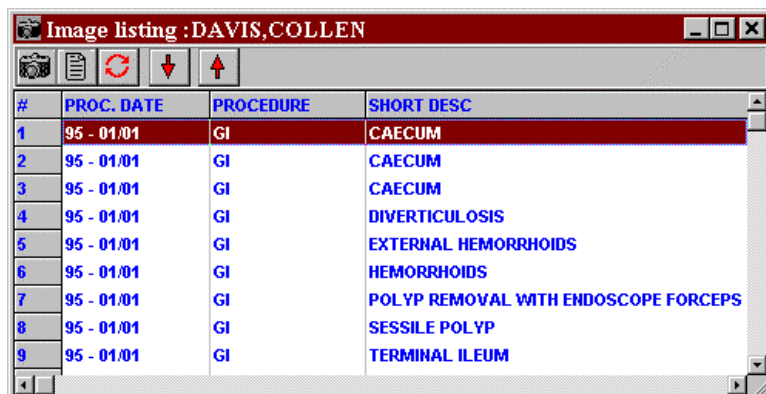
The image list window contains a list of all the patient's images or image groups, showing the date, procedure and short description for each.

Step	Action
1	Use your mouse or arrow keys to highlight the one you wish to view.
2	Double click or press the <enter> key and the full image or image group will be displayed.

3.4 Print an Image

The print button is located on the button bar of the Full Resolution View, Radiology View, and the Document windows. Clicking on this button will print the image being displayed. There is also a print menu option on the File menu of the Radiology window. You will be given the opportunity to select the printer to use or change the printer setup (not recommended). Then, Imaging V. 2.0 will send the image to the printer device you selected, using the printer parameters you selected in the Windows Print Setup window.

Note: The printed image is a part of the patient's data and should be handled in compliance with the Federal Privacy Act and VA Policy.

3.5 Copy an Image

The copy button is located on the Full Resolution View Window and the Radiology View Window. Clicking this button copies the image to the Clipboard. You may

then paste the image into a document or drawing using off-the-shelf software. If the image appears cut-off, you can resize the image to view all of it.

Note:

- **Most images displayed in Imaging V. 2.0 will not fit onto a 3½" 1.44 MB diskette. Use a portable storage format other than 3½" 1.44 MB diskettes, or use file-compression software that allows you to store a single file as an archive across multiple diskettes.**

- **The printed image is a part of the patient's data and should be handled in compliance with the Federal Privacy Act and VA Policy.**

3.6 View a Procedure Report for an Image

The View Report button is located on the Full Resolution View Window, the Radiology Display Window, the Document Window, and the Group View Window. Clicking on this button will cause a report to be displayed in the Image Report Window. This report will contain the long description for the image (if there was one entered), and the report for the medicine, surgery, radiology, or the laboratory procedure with which the image is associated.

3.7 Viewing Radiology Images from the Radiology Exam Window

The Radiology Exam window lists all radiology exams for the patient and includes the day/case number, exam date/time, procedure, and status of report. When images are available online for a case, an "I" will appear after the status report.

Imaging V. 2.0 users can select an exam using the mouse or keyboard, and view the report or images associated with that exam.

Step	Event	Action
1	To view the images associated with that exam...	Click on the image display button.
2	To view the report for this study...	Click on the report button.

.

Chapter 4 Viewing Reports for a Patient

4.1 Introduction

The Imaging V. 2.0 Display Software allows the user to view several different kinds of reports:

- medical procedure reports
- surgical operation reports
- anatomic pathology reports that include autopsy, surgical pathology, cytology, and electron microscopy reports
- radiology reports
- health summaries
- patient profiles

The procedure reports are displayed by:

- Pressing the report button on the Full Resolution View Window, the Radiology Display Window, the Group View Window, or the Document Window.

The health summary and patient profile reports are printed by:

- Clicking on the report button on the Main Window.

Note: You may open more than one Report Window at a time.

4.2 View a Report

To view a report, note the following:

Task	Action	Result
To view a report	Select the report button from the main, full view, document, radiology, or image listing window.	Imaging V. 2.0 will display the report using the font and font size specified in your user preferences.
To adjust your user preferences	Select Options|User Preferences from the **V**_IST_**A** Imaging System main window.	

4.3 Copy a Report

To copy a report, follow these steps:

Step	Action
1	Select a patient from the **V**IST**A** Imaging Main Window.
2	Click the right mouse button over the text of the report and choose Select All.
3	Click the right mouse button again and select Copy. This will copy the report to the Windows clipboard, which will allow you to use the Paste option in Windows word-processing programs to paste the report into a word-processing file.
4	You can also select part of a report displayed in the Report Window with the mouse, click the right mouse button, and select Copy. This will copy the segment of the report you selected to the Windows clipboard.

4.4 Print a Report

4.4.1 Overview
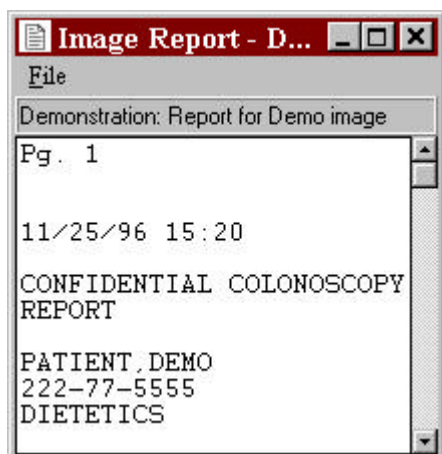
To print a report using the Image Report Window, follow these steps:

Step	Action
1	If you select File with your mouse or keyboard, you will see options for Font, Print and Print Setup.
2	Click on the Print option under the File Menu option to begin spooling and printing to a network or local printer.

You might want to select a different font to make the report window display or printout more readable.

4.4.1.1 Selecting a different font

To select a different font, click on the Font option. You will then be able to select the font, style, point size, effects, color and script.

4.4.1.2 Changing the Printer Setup

To change the printer setup, follow these steps:

Step	Action	Result
1	Click on the Print Setup option. Caution: This is not recommended for the novice user.	This option opens the standard Windows Print Setup window.
2	Be sure to change this back to the default printer when you are done printing so the next user will not inadvertently print data to the wrong device.	

4.5 Displaying a Health Summary or Patient Profile Report

```
RICHLAND,SAM Patient Profile                                    _ □ ✕
File
MAR 11,1938  177305005  NO SC VETERAN

RICHLAND,SAM                          177-30-5005          MAR 11,1938
======================================================================
Address: STREET ADDRESS UNKNOWN         Temporary: NO TEMPORARY ADDRESS
         UNK. CITY/STATE
 County: UNSPECIFIED                      From/To: NOT APPLICABLE
  Phone: UNSPECIFIED                        Phone: NOT APPLICABLE
 Office: UNSPECIFIED

Primary Eligibility: CHAMPVA (NOT VERIFIED)
Other Eligibilities:



Status       : ACTIVE INPATIENT-on WARD

Admitted     : APR 21,1985@17:00        Transferred    : APR 21,1985@17:00
Ward         :                          Room-Bed       :
Provider     :                          Specialty      :
Attending    :

Admission LOS: 25  Absence days: 1  Pass Days: 0  ASIH days: 0

Currently enrolled in GENERAL MEDICINE (VAX TEST),
                      RADIOLOGY CLINIC,

Future Appointments: NONE
```

When you click on the Display Patient Reports button on the **V***IST***A** Imaging Main Window, a Report Selection Window will appear.

You may choose one of the following tabs:

- Health Summary Report
- Patient Profile

Condition	Action	Result
If you select Health Summary Report...	1. Choose the type of health summary from the pull-down list to the right. 2. Select the item using the arrow keys or the mouse.	After a short pause, the Patient's Health Summary will be displayed in a Report Window.
If you select a Patient Profile...	No action needed	After a short pause, the Patient's Profile will be displayed in a Report Window.

Note: Imaging V. 2.0 displays each report in a separate Report Window.

Chapter 5 Declaring User Preferences for Reports and Displays

5.1 Introduction

Select User Preferences under the Options Menu of the **V***IST***A** Main Window to see the User Preferences window.
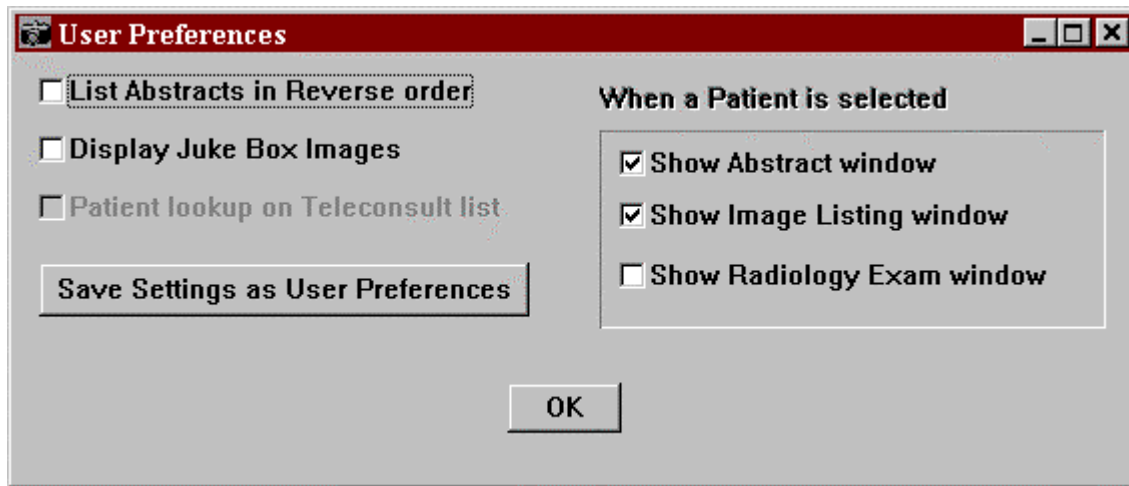
5.2 Abstract Display Order Preference

- Image abstracts may be displayed in chronological or reverse chronological order in the Abstract Display Window.

- A check mark next to "List Abstract in Reverse Order" indicates that abstracts will be displayed in reverse chronological order.

- The check mark can be toggled on and off by clicking on the box.

5.3 Display Jukebox Images

Many VA Medical Centers have jukebox devices for storing images when they have not been accessed for three months or more. This means that it will take about 20 seconds for these images to be displayed. Note the following:

Condition	Action	Result
If you do not want to wait for these images…	Press the mouse button over the "Display Jukebox Images" box to remove the check from this box.	In this case, you will see a message in the abstract box if the image is on the jukebox.
You may still…	Click on the abstract image or the Image List.	Displays the Full Resolution image from the jukebox.

Because abstract images are automatically copied back to fast storage after a patient is selected, you may see the abstracts the next time you select this same patient.

5.4 Show Abstract Window

- You may choose to display the abstract window when a patient is selected by checking the box next to "Show Abstract Window".

- This is recommended for most clinical users.

- If this is not selected in your user preference box, you will not see the abstracts.

Note: If you check the Show Abstract Window box after you have selected a patient, Imaging V. 2.0 will not open the Abstract Window. In this case, follow these steps:

Step	Action
1	Go to the **V**_IST_**A** Imaging System Main Window.
2	Place the cursor to the right of the patient name, and press the <Enter> key. This will command Imaging V. 2.0 to search for the current patient and consult the user preferences again.

5.5 Show Image List Window

Note the following procedure:

Task	Action	Otherwise
To view the Image List Window...	Check the box next to "Show Image List Window".	This window will not appear automatically for all patients.

5.6 Show Radiology Exam Window

Note the following procedure:

Condition	Action	Result
If you view a lot of radiology images...	Have the Radiology Exam Window open for all patients. Check the box next to "Show Radiology Exam Window".	The Radiology Exam Window lists all radiology exams for the patient, including: • day/case number • exam date/time • procedure • status of report When images are available

Condition	Action	Result
		online for a case, an (I) will appear after the status report. Imaging V. 2.0 users can select an exam and view the report or images associated with that exam.

5.7 Save Settings Option

Note the following procedure:

Condition	Action	Result
If the user resizes any windows or moves them around on the screen (creating a new arrangement)...	1. Select "Save Settings" under the Options menu of the main window. 2. The setting can be saved now, or when the user exits Imaging V. 2.0.	The new arrangement is saved as the User Preferences.

Chapter 6 Adding Images to Patient Records

6.1 Introduction

Imaging V. 2.0 not only functions as an image browser, it allows users to add images to patient records. This chapter explains how to add images from various sources to patient records, and associate those images with procedures and reports.

6.2 Configuring Your Workstation to Add Images to Patient Records

6.2.1 Introduction

Whenever a new device is installed on your image capture workstation, you will need to configure the new capture device. Note the following:

Task	Action	Result
To configure the new capture device...	Select Configuration under the Options menu of the **V**_IST_**A** Imaging Capture Window.	Opens the Configuration Window.
To configure the capture software for the new device...	1. Select the Input Source, Image Type, Specialty, and method for saving images. 2. At this time, you may create a button for this configuration. 3. Click on the **OK** button.	Configures the **V**_IST_**A** Imaging capture software for the new capture device.

6.2.2 Declaring an Input Source for the Image

The Input Source identifies the type of input device being configured. It may be any of the following:

- A Lumisys X-ray scanner, model 75, 100, 150 or 200, which produces a 1K x 1K x 8-bit grayscale image and optionally a 2K x 2K x 12-bit diagnostic quality grayscale image

- A Truevision **V***ISTA* image capture board which produces a 24-bit color or 8-bit black and white image from RGB NTSC input

- A Matrox Meteor image capture board which produces a 24-bit color or 8-bit black and white image from RGB, S-Video, or Composite NTSC inputs

- Image Import from your local disk or a network drive

- A standard TWAIN device such as a color, X-ray, or document scanner or a still video camera; these may produce a 1-bit or 8-bit black and white image or a 8-bit or 24-bit color image (in the future, 12-bit 2K x 2K diagnostic quality X-ray images will be supported)

- A customized TWAIN source called ScanECG which produces a 256 color scan at 100x100 dpi

- A customized TWAIN source called ScannedDocument which produces a 1-bit 200x200 dpi document (FAX quality)

Note: Clicking on the "TWAIN Source" button displays a list of all TWAIN sources connected to the workstation for you to choose from. If only one TWAIN Source is connected to your workstation, which is usually the case, it will be automatically selected. You do not have to click on the TWAIN Source button; no list will be displayed if the button is selected.

Only those selections that appear in black letters are available on your workstation. Note the following:

Task	Action	Result
To select an input type (that which appears in black letters)...	Click the left mouse button on the input type you will be using.	- A small check will appear beside your selection. - Your selection will also be indicated on the <u>Information Panel</u> near the top of the capture window.

6.2.3 Selecting an Import Mode

Import mode is used when a standalone device has been used to capture images to the local workstation or to a shared drive. The user may identify the image, view it, and then import it into the **V***IST***A** Imaging System V. 2.0. Three modes of import are supported, including:

- **"Copy to Server" mode**: copies the file from the workstation disk to the **V***IST***A** Imaging server, renaming the copied file to a name assigned by the Imaging System V. 2.0. The file extension remains the same, and no additional compression is performed. The following file formats are supported:

  - TGA
  - TIF
  - BMP
  - JPG
  - PCX
  - GIF
  - WPG

- **"Convert to TGA" mode**: converts the workstation file from its existing format to the TGA format. The image is then saved to the **V***IST***A** Imaging V. 2.0 server using a name assigned by the Imaging System V. 2.0. The file extension will be TGA. This is an uncompressed format. If your site is running **V***IST***A** Imaging V. 1.0 workstations with ATVISTA boards for display, you must use this option.

- Convert File Format to Default (see attached printout from MAGSYS.EXE file).

Using any of these options, the original file will remain on the workstation disk and a copy will be made on the **V***IST***A** Imaging V. 2.0 server.

The input mode must be selected when the workstation is configured by IRM staff.

6.2.4 Declaring the Image Type

The Image Type is used to indicate the type of image resulting from the capture process. Possible types include:

Image Type	Characteristics
X-ray	8 or 12-bit grayscale image
True Color TGA True color JPG	24-bit image; ATVISTA board produces 768x486; Meteor produces 640x480 pixels; TWAIN produces a variety of resolutions

Image Type	Characteristics
Black and white	8-bit grayscale image, 768x486 or 640x480
Document Uncompressed TIF	1-bit, 200x200 dpi (or other resolution)
Document G3 FAX Compressed TIF	1-bit, 200x200 dpi, 8.5" x 11.0" image
256 Color	8-bit color image, variable spatial resolution depending on source
Motion Video	AVI motion video file (not currently supported)
Audio	WAV file (not currently supported)

These image types are not available for all input devices. Types that are not available will appear gray on the configuration window, and you will not be able to select them.   Note the following procedure:

Condition	Action	Result
If the correct image type is not checked...	Click your mouse on the type of image you will be capturing.	Selects the desired image type.

X-ray is used for scanned x-ray films of any sort. This includes the following scanners:

- Lumisys
- Vidar
- Howtek

It may also be used for other black and white images where exact manipulation of the gray scale is necessary.

Black and White is used for:

- Ultrasound
- Cardiac catheterization
- Pathology fluorescent stains, etc.

Color should be used for all color captures, including:

- ATVISTA board
- Meteor board
- TWAIN color sources
- Still video camera sources
- Color imports

The Document type is for 1 bit scanned documents. The EKG, motion video, and audio types are not yet available, but are expected shortly.

6.2.4.1 Selecting a TWAIN Image Type

If you have selected a TWAIN device, you will have four choices for image type.

	TWAIN Setting	**V*IST*A Imaging V. 2.0 Capture Image Type**	**Used for**	**File produced**
Choice 1	Lineart	Document uncompressed TIF or Document G3 FAX compressed TIF	Printed text, diagrams annotated in black	1-bit document, TIF format
Choice 2	Gray	X-ray or Black and White	X-rays and other radiologic images, black and white photographs such as electronmicrographs	8-bit grayscale, default format
Choice 3	256 Colors	256 Colors	Scanned results such as EEG, ECG, electrophoresis whether color is used; Text and diagrams annotated in color	8-bit color image, TIF format

	TWAIN Setting	V*IST*A Imaging V. 2.0 Capture Image Type	Used for	File produced
Choice 4	True color	True Color TGA or True Color JPG	Color photographs, 35mm slides, still camera input	24-bit color image, default format

Be sure that the image type selected for the **V***IST***A** Image Capture corresponds to the image type selected on the TWAIN window. Depending on the equipment manufacturer, different TWAIN Image Types may be listed; in fact, not all vendors support all of these image types.

6.2.5 Declaring the Specialty Package for the Procedure Associated with the Image

This pulldown menu allows you to select the **V***IST***A** package with which your images will be associated. Choices include:

- Laboratory (requires version 5.2 patch LR*5.2*34)

- Medicine (requires version 2.2)

- Radiology (requires version 4.5)

- Surgery (requires version 3.0)

- None (image(s) will be associated with a patient, but not a procedure)

You will be able to select the patient's procedure or exam from the list available in the selected specialty. The captured images will be associated with the selected report.

6.2.6 Declaring the Capture Mode

At the present time, the only two choices available are online and test mode. Online indicates that images will be saved in the network servers and will be associated with **V***IST***A** patients.

Test Mode on the Capture Configuration window can be used to test the new input device without saving the image, or associating it with a patient.

6.2.7 Declaring how the Image Will be Saved

Review the following information:

- **Study Group**:

  ❑ Images can be saved as part of a group of images (e.g., three images might be saved for a colonoscopy).

  ❑ If these are saved as a group, only a single abstract will be displayed in the abstract view window.

  ❑ When the user clicks on this abstract, the group view window will open and show the three abstracts for the images belonging to the group.

  ❑ A group may contain more than one type of image, (e.g., color images of colonoscopy views and a scanned document representing a diagram of the lesion's location in the colon).

- **Single Images**: Images can be saved as singly. In this case, each single image's abstract will appear in the AbstractView window.

6.2.8 Declaring Whether Lookups Will Be By V*IST*A Patient or Tele-Consult Request

At the present time, only the "No" option is available for this choice. This configuration option controls whether patient images sent from another site that belong to patients not registered in the local **V***IST***A** system may be accessed.

6.3 Selecting the Patient

6.3.1 Introduction

To capture images for a **V***IST***A** patient, follow these steps:

Step	Action
1	Sign into the system.
2	Enter either: • patient's name (or beginning portion thereof) • patient's social security number

Step	Action
	• **V**_IST_**A** shortcut id (first letter of the patient's last name followed by the last four digits of the patient's social security number) at the Patient: prompt in the **V**_IST_**A** Imaging System V. 2.0 window.
3	Press the <Enter> key when you are done.

If more than one patient matches your entry, you will be presented with a list to choose from on the Patient Selection Window.

Imaging V. 2.0 displays patient demographic information for the selected patient on the information panel below the Patient Selection text box. This includes:

• Date of birth
• Social Security number
• Service-connected status

6.3.2 Verifying Patient Identification

• The date of birth and Social Security number of the selected patient are displayed alongside the name of each patient.

• To determine whether you have selected the correct patient, compare this information with the date of birth and Social Security number of the patient that you want.

- The Patient Lookup Window, which shows a list of patients that match the patient name entered when more than one name is found, also lists patient demographics.

6.4 Selecting the Procedure Associated with the Image

It is important to select the Procedure or Exam that corresponds to the images to be captured.

The specialty was selected as described in Section 6.2.5. The needed input data fields for that specialty will be displayed on the "**V***IST***A** Imaging System – Capture" window. The user will have to enter certain data depending on the selected specialty.
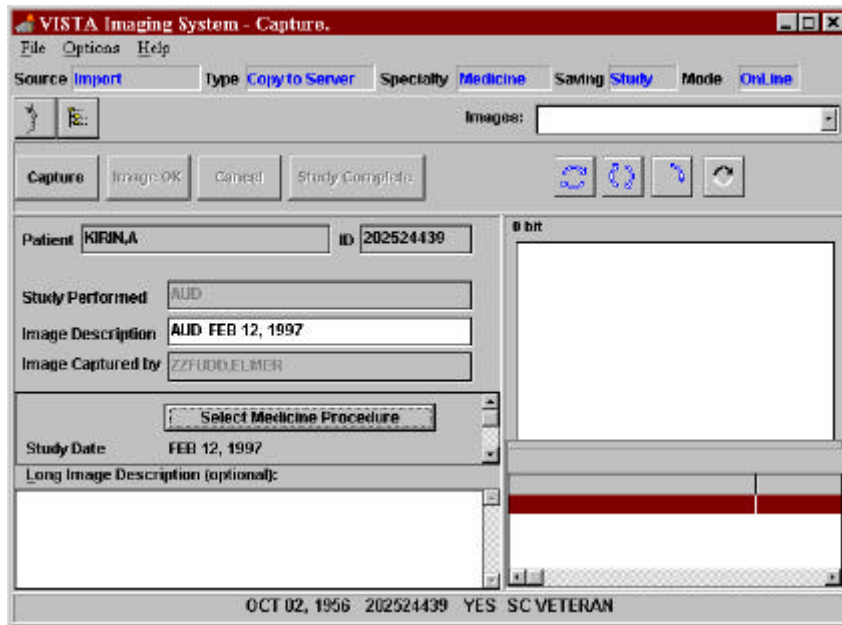

6.4.1 Selecting a Medicine Procedure

Click on the "Select Medicine Procedure" button. The selected patient name will appear at the top of the Medicine Procedure/Subspecialty window. Below is a list box containing the abbreviations of all possible procedures. There is a button that changes this listing to full names rather than abbreviations.

To select the medicine procedure being performed, follow these steps:

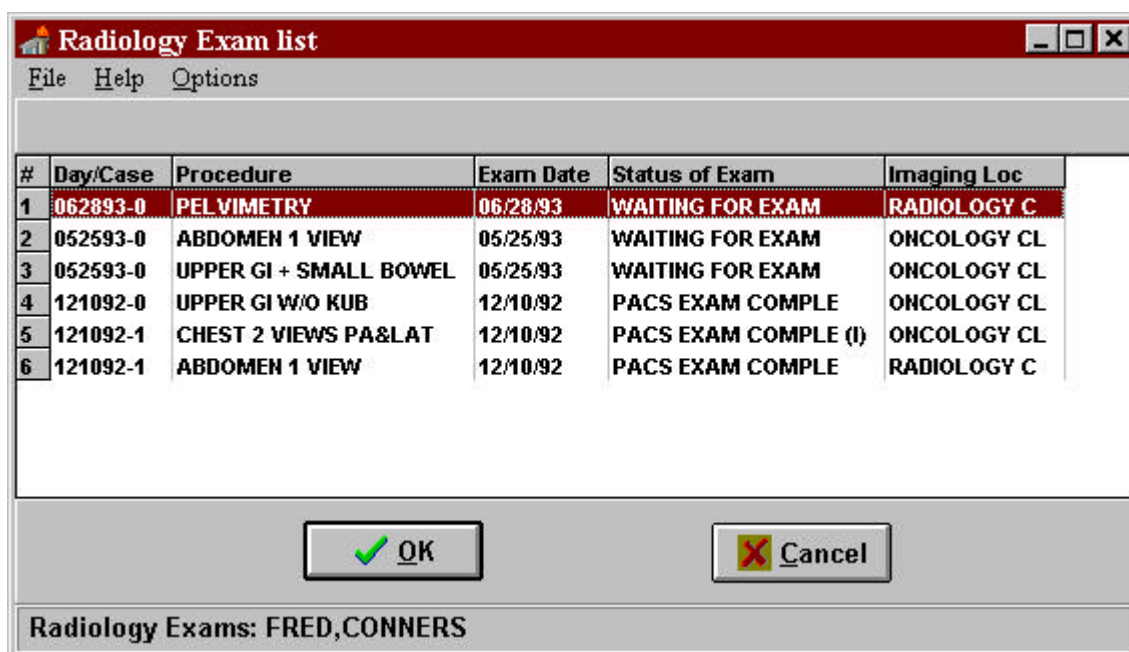| Step	Action	Result
1	• Click on the appropriate procedure with the left mouse button... (or) • Click on the **New** button above to create a new procedure with the current date and time.	The lower right-hand list box will show a listing of all procedures for the selected patient.
2	Click on OK.	Returns to the main capture window.
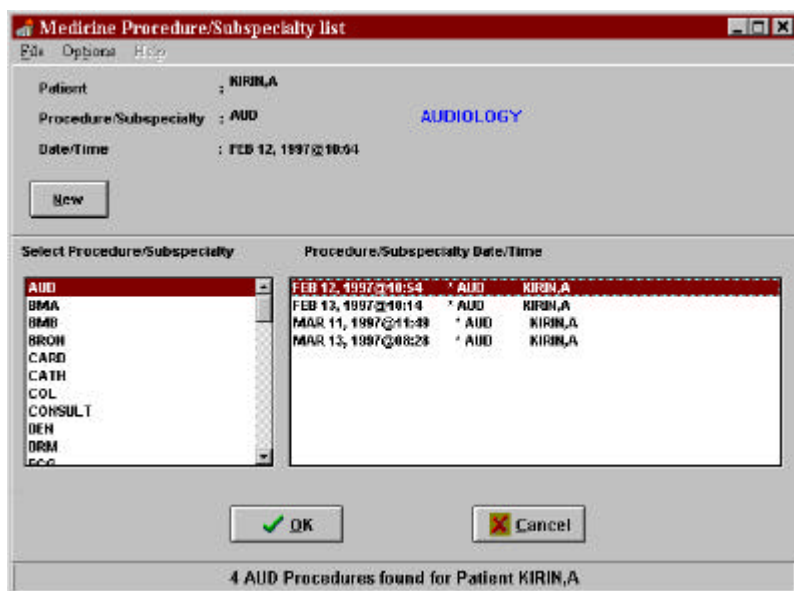
6.4.2 Selecting a Radiology Procedure

Click on the "Select Radiology Exam" button. The selected patient name will appear at the top of the Radiology Exam Listing window. Below, all ordered exams for the patient will be listed including the case number, procedure ordered, and status.

To select the radiology procedure being performed, follow these steps:

Step	Action	Result
1	Click the left mouse button on the correct radiology exam.	Selects the correct radiology exam.
2	Click on the OK button.	Returns to the capture window.

6.4.3 Selecting a Laboratory Procedure

To select the Laboratory Procedure, follow this series of steps:

Step	Action	Result
1	Click on the "Select laboratory Specimen" button.	Opens the "Anatomic Pathology Lab Selection" window.

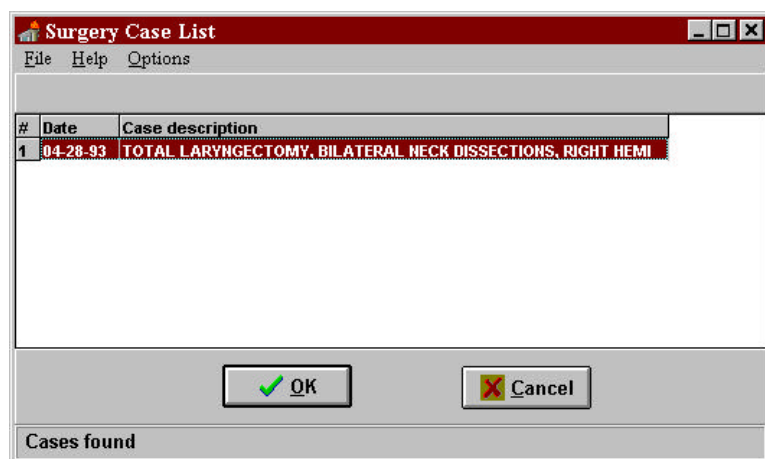| Step	Action	Result
2	Select the laboratory section from the section drop-down list box.	
3	Enter the accession year and the number.	
4	Click on the "Search" button.	Imaging V. 2.0 displays a list of specimens.
5	Choose a specimen by clicking on it.	
6	Click the "OK" button.	

6.4.4 Selecting a Surgery Procedure

To select the surgery procedure being performed, follow these steps:

| Step	Action	Result
1	Click on the "Select Surgical Procedure" button.	Opens the "Surgical Procedure Selection" window.
2	Choose a procedure by clicking on it.	Imaging V. 2.0 lists the surgical procedures for the patient.
3	Click the "OK" button.	

6.5 Acquiring the Image

6.5.1 Introduction

Step	Action	Result
1	Click with the left mouse button on the Capture button.	• Imaging V. 2.0 executes the capture software for the "Input Device" that you have selected. • Depending on the input device,

Step	Action	Result
		Imaging V. 2.0 displays one of several different capture windows.
2	• Click on the "Image OK" button if the captured image... ❑ Is correct and the quality is good. (or) • Click on the "Cancel" button if the captured image... ❑ Is not the correct image or... ❑ Is not of good quality.	Once you have captured an image, Imaging V. 2.0: • Displays the image. • Enables the "Image OK" and "Cancel" buttons.
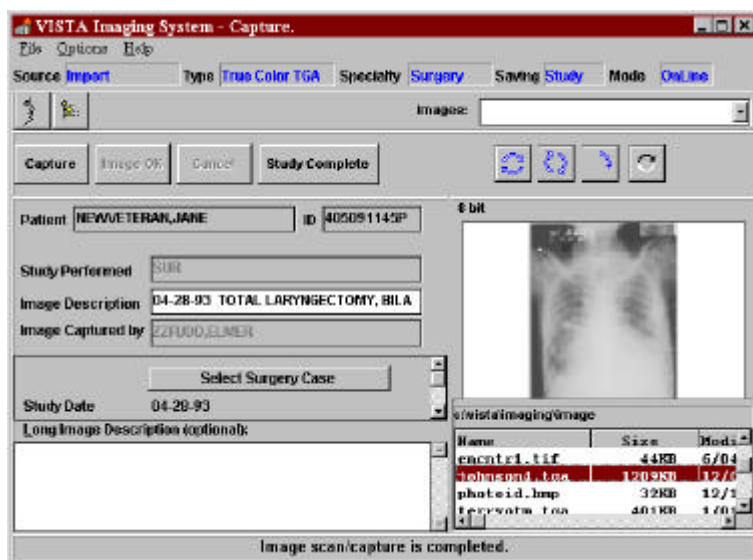
6.5.2 Scanning

The following will occur:

Sequence	Event
1	You should hear the X-ray or document scanner running.
2	Subsequently, after some seconds, an image will appear in the image box on the right side of the **V***IST***A** capture window.
3	If necessary, you may use the rotate or flip button to adjust the image.

6.5.3 Frame Grab with ATVISTA Board

The following will occur:

Sequence	Event
1	If you have an ATVISTA board, a live image will appear on the Image monitor.
2	A window will open prompting you to press a key when ready to capture the image.
3	You will then be given a choice to accept the image if it is OK or capture again.
4	After a few seconds, an image will appear in the image box on the right side of the capture window.

6.5.4 Frame Grab with Meteor Board

If you have a Meteor board, a window will open on your workstation monitor and you will see the live image in the window. Note the following procedure:

Step	Action	Result
1	Click on the Freeze button to capture the image.	
2	• If you do not like the quality of the image, click on the	

Step	Action	Result
	Continue button, and the window will again display a live image (without performing a capture). • You may then repeat the capture procedure.	
3	Click on the Image OK button when you have an acceptable frozen image.	After a few seconds, an image will appear in the image box on the right side of the capture window. The meteor window will remain open with a live image, but focus will move to the capture window.

6.5.5 TWAIN Still Video Cameras

If you have a still video camera with a TWAIN interface, you must first connect up the camera to the workstation. Be careful to do this with the workstation powered-off, if the instructions recommend this.

There are two basic types of interfaces:

• The type that inputs images that have been recorded by the camera at a previous time.

• The type that operates in live mode, inputting images as they are captured.

Note the following:

Condition	Action	Result
If your camera captures images before connecting to the workstation, when you click on the Capture button...	Follow the instructions provided with the camera and select the image to be captured by the **V**_IST_**A** Imaging System V. 2.0.	• You may hear a noise from the camera. • A series of images will probably appear in the TWAIN window (depending on the software provided with your camera).

Condition	Action	Result
		• After performing the camera instructions and selecting the image to be captured, the image appears in the **V***IST***A** Capture window.
If your camera captures images while being connected to the workstation	Follow the instructions provided with the camera.	As you capture an image and indicate that it is acceptable, it will appear in the **V***IST***A** Capture window.
If your camera provides image download capability…	• Follow the instructions provided with the camera and download your images to a directory on your workstation. • Be sure the images are saved in a standard file format. • Then, follow the instructions in Section 6.5.6 for importing an image.	

6.5.6 Importing an Image

To import an image, follow these steps:

Step	Action	Result
1	Select the default directory by using the Import Directory option under the Options menu.	
2	During image import, you should select the image file using the directory and file box located on the right-hand side of the **V***IST***A** Capture window.	When you have selected an image, it will appear in the image box.
3	Click on the **Import Image** button.	

6.6 Entering Data for the Image

• The data fields required to save an image to **V***IST***A** do not have to be entered before you click on the "Capture" button.

• Imaging V. 2.0 executes a required field check when you click on the "Image OK" button.

• If any required fields are missing data, Imaging V. 2.0 will warn you by displaying a message in the message bar at the bottom of the capture window and positioning (set focus) the cursor to the required field that has missing data.

• Depending on the specialty selected, different data fields will be required.

• The data fields required will have a white background and the user can click on the field or "tab" to the field and then enter the needed data.

6.6.1 Entering the Short Image Description

• The image description will appear whenever the image is displayed.

• It should briefly (60 characters or less) describe what is clinically important about this image.

- A default image description will be provided for radiology exams.

- The user may edit the description.

6.6.2 Long Image Description

- This word processing box allows the user to enter free text.

- This text...

    ❑ Will appear when the image is displayed and the user asks for the report.

    ❑ May be used in teleconsultations to provide information to the reading consultant.

    ❑ Should include pertinent information and the reason for the consultation.

- This information will be delivered to the consultant in a **V***IST***A** mail message and will be available at the time of the consultation by requesting the image report.

- This field may also be used for a note about the image, or a longer description of the image.

6.7 Approving the Image

Assuming you have selected a patient, a specialty procedure, exam or specimen, and have entered the other required fields of data (i.e., the image description), you can now click the "Image OK" button.

To approve the image, follow these instructions:

Condition	Action	Result
When the image in the image box is acceptable...	• Click on the "Image OK" button (Note: You must click on this button before capturing another image).	
Depending on your workstation configuration, a window will appear confirming the	• Click on the "OK" button. • Click on the "cancel" button if you need to change the	• A notification that the scan/capture is completed will appear at the bottom of the **V***IST***A** capture window.

Condition	Action	Result
image information.	configuration before approving the image.	• The "Study Complete" button will become enabled.

6.8 Repeating Image Acquisition

Condition	Action	Result
If an image capture was done incorrectly and needs to be repeated…	Correct the position of the subject or the focus, if necessary. 1. Click on the Cancel button. 2. Click the Capture button again, causing the image to be recaptured. 3. Repeat this process until you have an acceptable image. 4. Click on the "Image OK" button.	Displays the new image in the image area.
If you selected "Image saved as a study group" on the Configuration Window …		Imaging V. 2.0 will display the "Study complete" button.

6.9 Indicating Completion of a Study

If your workstation is configured to save images in groups, and to indicate completion of a study, note the following:

Condition	Action	Result
When all images have been captured for a procedure...	Click the left mouse button on the "Study Complete" button.	This will create a group of images and associate them with the patient's report.

6.10 Viewing Patient's Images

To view a patient's images from the Capture Window, perform the following:

Action	Result
Select the option "Options|Load Patient Images".	• At the top right of the **V***IST***A** Capture window is a pulldown list box labeled "Images". • When a patient has been selected, his or her previously captured images will be listed here. • The image description is displayed in the pull-down list. You may view an image by clicking on an image description. • The newly captured images will be displayed at the end of the list.

6.11 How to Disconnect a Mobile Workstation From the Network

Medical mobile stations are typically shared by a medical group for similar medical functions. Those functions can occur at several locations within a medical center (e.g., a workstation shared by several operating rooms). Medical workstations are configured to receive either video or RGB input from medical equipment.

All mobile stations will need to be disconnected from a power source and from the Ethernet network before being moved, as described in the following section.

Follow these instructions to disconnect a medical mobile station:

Mobile Workstation	Action
Medical mobile stations	1. Shut down Windows and power-off the workstation. 2. Disconnect the workstation input cable(s) at the source of the signal. These connections may have four wires: • Red • Green • Blue • Sync (Synchronization) Note: All cable(s) should stay with the workstation. 3. Disconnect the network cable. 4. Unplug the workstation power-cord from the wall outlet. 5. Reconnect above cable(s) at the new location.

Chapter 7 Viewing Medical Information Remotely

7.1 Introduction

A user with access privileges to an Imaging System V. 2.0 at another VA facility may view patient's records from that site across the IDCU network. A user also may be able to dial into the local **V***IST***A** Imaging System V. 2.0 depending on the site's configuration.

7.2 Connecting to a Remote Imaging System V. 2.0

IRM must configure your workstation for remote access. Start Imaging V. 2.0 as you usually would, following these steps:

Screen Display	Action
User will see a "connect to" window.	1. Select the name of the VA system that you want to access from the pull down list. 2. Click ok.
User is prompted to enter his/her access and verify code for the remote VA system.	Enter access and verify code for the remote VA system.
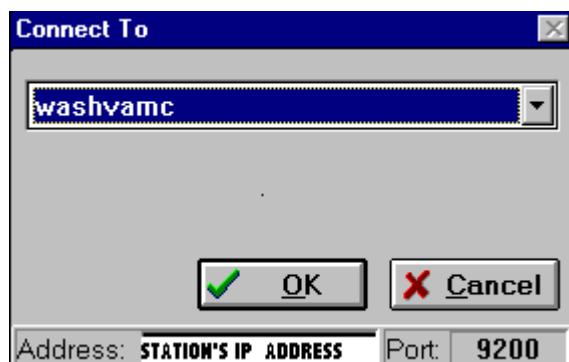
The figure presented above is an example of the "Connect To" window. This window is only available if the workstation has been configured to allow remote connections. Review the VISTA Imaging V. 2.0 Installation Guide for more information.

7.3 Using Imaging V. 2.0 Software Remotely

Operation of the **V***IST***A** Imaging V. 2.0 software will be the same as when connecting to your local site.

- You may display or capture images remotely.

- You may prefer to use the image listing window instead of the abstract view window to speed up operation (However, the abstracts will be displayed in a few seconds even over the IDCU, allowing ad hoc selection of images for viewing).

- Full image display will take somwhat longer over the IDCU (i.e., often 30 seconds remotely, instead of the 3 seconds obtained locally).

Chapter 8 Following Patient Treatment Progression

8.1 Introduction

You can use Imaging V. 2.0 to...

- Capture images that depict the progression of a disease process, or a medical or surgical treatment. This is usually done by imaging the same lesion on successive occasions.

- Capture images during patient visits to outpatient clinics, emergency rooms, and in hospital wards.

Various hospital staff capture these images, including doctors, nurses, and medical technicians.

8.2 Gathering Patient Images for a Report

During treatment, hospital staff can take digital photographs of wounds and append these photographs to the patient's electronic record. They may be used to supplement a report.

8.3 Gathering Patient Images for Legal or Medical Care Cost Recovery

In the past, documents such as photographs, X-ray film, slides, and photocopies have been inserted in the file folders of patients. These documents are used by many medical services and are not always available when needed. New **V**_IST_**A** Imaging V. 2.0 capabilities make all of the patient's digital records available at any Clinical workstation.

Chapter 9 Collecting Research Data

9.1 Introduction

Medical research is conducted on an ongoing basis at all medical centers. Researchers are faced with the need often to store text as well as images, to document the stages of their studies. Storing and retrieving large amounts of visual data are tasks well suited to computerization.

9.2 Collecting Images

Most of the medical equipment used by patient care providers is capable of producing digital images. Those units that are not able to produce a direct digital image usually provide a video display. **V***IST***A** Imaging V. 2.0 equipment can be configured to attach to these medical systems and provide a means to save images in patient files. Other systems can provide these images as well. Some examples of these systems are:

- still and motion video cameras
- black and white or color scanners

Imaging V. 2.0 allows users to add descriptive text to the images while they are being saved.

9.3 Organizing Data

You can use Imaging V. 2.0 to sort the images you collect and associate them with text descriptions and reports. Sorting capabilities will be enhanced in future versions.

9.4 Presenting Research

You can use Imaging V. 2.0 to export images to commercial off-the-shelf software. The file formats of the exported files are in common, standard formats. You can then use your commercial software to add the images to desktop presentation software.

Chapter 10 Preparing for Conference Presentations

10.1 Introduction

A major use of Imaging V. 2.0 is for patient presentations during conferences.

10.2 Capture of Images for a Conference

If the images to be shown are not already in the system, they should be captured from their storage media (e.g., microscope slides, videotapes, photographs, films). Follow the instructions in Chapter 6 for capturing images. The image description field can be used for any notes specific to the image. Be sure to link the images to their corresponding procedure or report. It is recommended that you make written notes of the patient identifications and images for the conference.

10.3 Testing Display Workstation Before Conference

Before the conference, a member of the conference team should check the workstation in the conference room to be sure that everything is working properly. During your test, you should view the images you plan to use during the presentation to make sure that there are no unexpected workstation, projector, server, or **V**_IST_**A** problems. Viewing the images will also cause Imaging V. 2.0 to move jukebox images to magnetic storage for more rapid display during the presentation. If you encounter a problem during the test, notify your IRM service immediately.

10.4 Creating Slides From Online Images

Recently, a staff member at one VA Medical Center captured a series of teaching slides from a very unusual case into the **V**_IST_**A** Imaging System V. 2.0.   The Medical Media Service had 35 mm slides, generated directly from those **V**_IST_**A** images, ready for case presentation at the adjoining university hospital as he left the building that evening.

Chapter 11 Compiling Data for Consult With Clinical Practitioners

11.1 Introduction

Medical images are often used by clinical practitioners and specialists during consultations. Imaging V. 2.0 enables users to collect images that can be used to make decisions about patient care.

11.2 Documenting a Patient's Condition During a Clinic Visit

The clinician can use imaging equipment (such as a video camera) to enhance a description of a medical condition. The images can serve as a basis for further treatment. A comparison of previous images to later results can reveal the progression of treatment.

11.3 Appending Imaging Data

Each specialist that treats the patient can append their visual data to the patient's medical record. Each patient care provider can then track the record of the medical condition using the data accumulated by their predecessors.

11.4 Conferencing Between Clinicians and Specialists

In live conferences or teleconferences, several clinicians and specialists can view patient images. Medical staff from a VA medical center can share that data with any other VA medical center by granting them remote access to the **V***IST***A** files.

Chapter 12 Menu Outline

This chapter explains how the windows in Imaging V. 2.0 relate to each other in terms of what windows can be accessed directly from a command in another window.
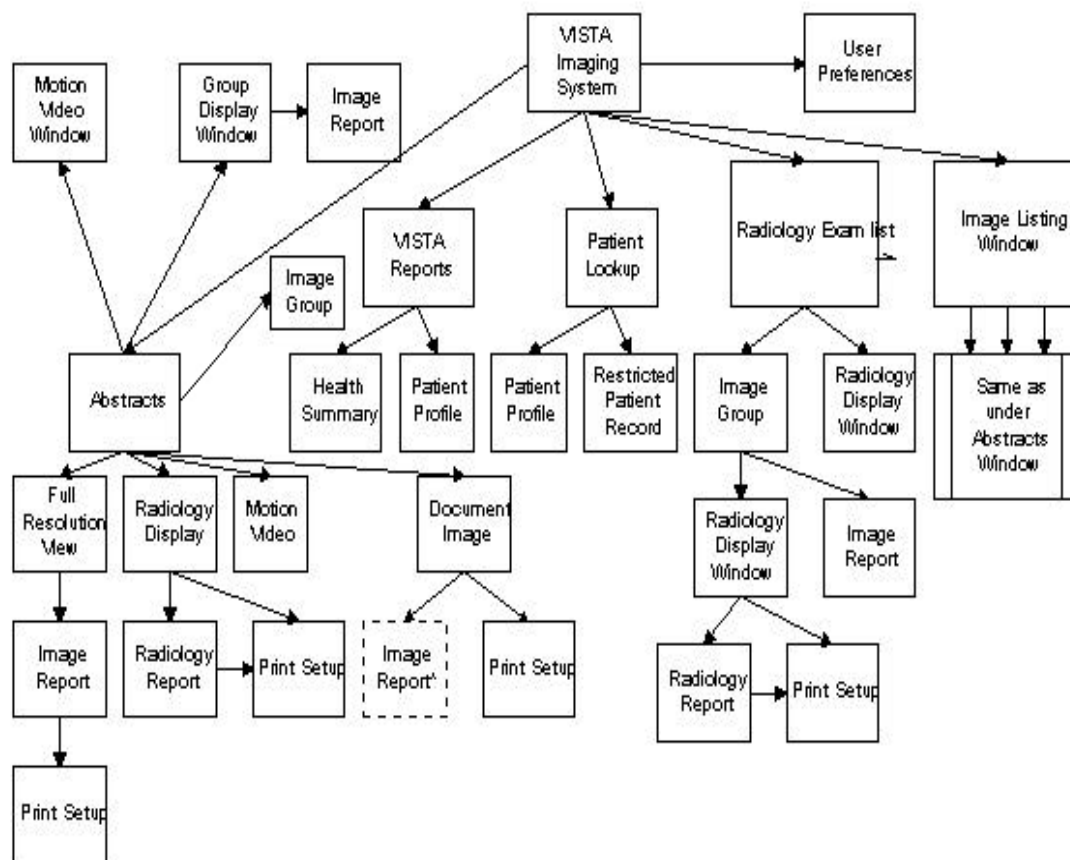
Appendix A Descriptions of Windows in Imaging V. 2.0

A.1 Introduction

This chapter lists each window in Imaging V. 2.0, and describes most of the objects (buttons, tabs, selection lists) on each window. This chapter does not explain how to use the windows and objects in the context of performing a task; please consult the previous chapters of this manual to learn how to use Imaging V. 2.0 to perform specific tasks.

A.2 The V*ISTA* Sign-on Window

A.2.1 Window Description

When accessing this window, the user will be prompted to perform the following:
- Enter Access code into the Access Code input field.
- Press <Tab> and enter the Verify Code into the Verify Code input field.
- Click on "OK" button or press <Tab> to move to the 'OK" button and press <return>.
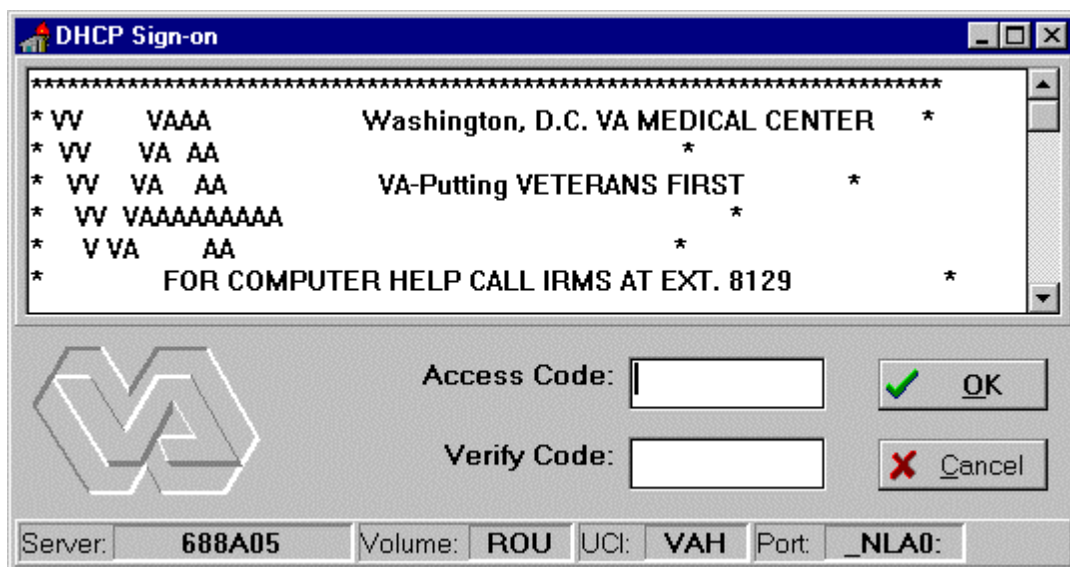
Access Code: Use the Access Code text box to enter your access code. Access Codes are set by the Information Resources Management (IRM) Service at your site.
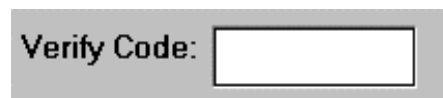
Verify Code: Use the Verify Code text box to enter your verify code. Verify codes are originally assigned by the Information Resources Management (IRM) Service at your site, but you must change your verify code periodically by logging onto The **V***IST***A** System directly.
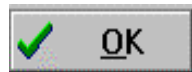
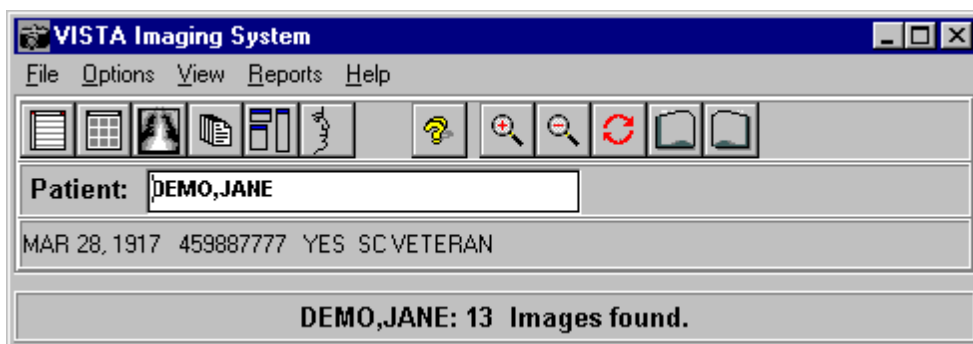**✓ OK** Press the OK button after you have entered your access and verify codes.

✗ Cancel Press the Cancel button if you can not or do not wish to sign onto **V***IST***A**.

A.3 **V***IST***A** Imaging System V. 2.0 Display Window

A.3.1 Window Description

The **V***IST***A** Imaging System V. 2.0 Window is the first window Imaging V. 2.0 displays after you sign onto **V***IST***A**.

A.3.2 Button Descriptions

The Open Detailed Image List button opens the Image Listing window for the patient.

The Open Abstract Window button opens the Abstracts window for the patient.

The Open Radiology Window button makes the **V***IST***A** Radiology Display window the active window on your desktop, if any Radiology Images have been opened for display.

The Patient Reports button opens the **V***IST***A** Reports window for the patient.

The User Preferences button opens the User Preference window for Imaging V. 2.0.

The Patient Lookup button sends the cursor to the Patient box. Enter the name of the patient whose images you want to view.

The Winhelp button launches the Winhelp topic for this window.

The Increase Abstract Size button increases the size of the abstracts in the Abstracts Window.

The Decrease Abstract Size button decreases the size of the abstracts in the Abstracts Window.

The Refresh button redisplays the abstracts in the abstracts window. Use this button when your window does not display the abstracts properly.

The Previous Page button shows the previous page of abstracts on the Abstracts window. Use this button when the abstracts are too big for all of them to display in the window at once.

The Next Page button shows the next page of abstracts on the Abstracts window. Use this button when the abstracts are too big for all of them to display in the window at once.

Enter the name of a patient for which you want to view image records in the Patient box.

A.3.3 Menu and Option Descriptions
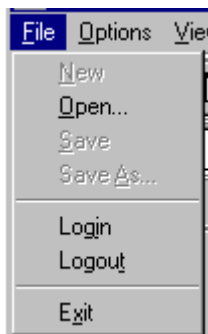
The "New" option is **not yet available**. The "Open" option allows you to select a new patient, and closes all windows of the current patient. The Login and Logout options will log you in or out of the **V***IST***A** System. You can also use the Login option to login as a different user. Use the Exit option to exit Imaging V. 2.0.
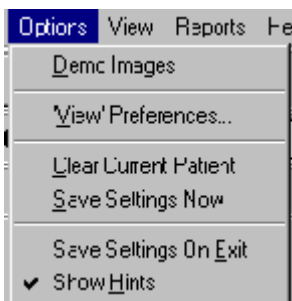
The "Demo Images" option under the Options menu displays a set of sample images, reports and documents for a sample patient. This option allows you to see all of the functions of Imaging V. 2.0 without consulting actual patient data. The "User Preferences" option opens the User Preferences window. The "Save Settings" option allows you to declare whether you want Imaging V. 2.0 to save the user preferences now or when you exit Imaging V. 2.0. The "Show Hints" option allows you to declare whether you want Imaging V. 2.0 to display hint text for objects on the Imaging V. 2.0 windows when you hold your mouse pointer over the objects.
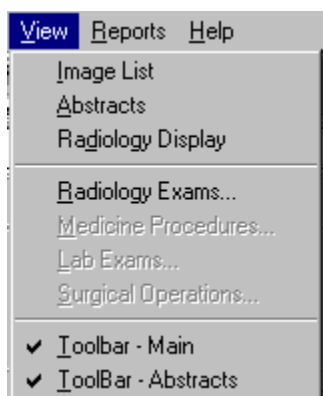
The View menu lists several windows you can view, and allows you to declare whether you want Imaging V. 2.0 to display the main and/or abstracts toolbar on the **V***IST***A** Imaging System V. 2.0 menu. The "Image List" option displays the Image Listing window. The "Abstracts" option displays the Abstracts window. The Radiology display will show the Radiology display window if any radiology images are open. The Radiology Exams option will show a listing of radiology exams for the current patient.

A.4 Image Listing Window

A.4.1 Window Description
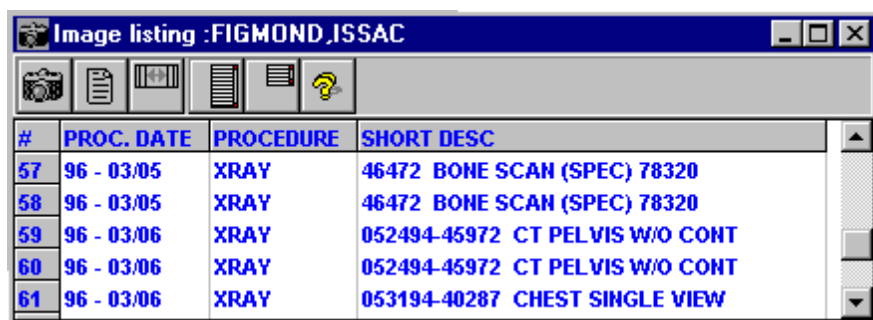
The Image Listing Window lists the available images for a patient you selected in the **V***IST***A** Imaging System V. 2.0 Window. It shows the procedure date, procedure name, and a short image description.

A.4.2 Button Descriptions

The View Image button displays the image you selected. You may also double-click with the left mouse button on the image description.

The View Report button displays the image report for the image you selected. The image report begins with the long description of the image, if the Imaging V. 2.0 user who captured the image entered a long description. If the image you selected is an image from one of the defined clinical specialties in Imaging V. 2.0 (i.e., Radiology, Medicine, Surgery, Lab), the image report will also include the specialty report to which this image is assigned.

The Reset Column Width button resizes the columns in the window. The new size of each column will be wide enough to display the longest entry in the column. The columns can be resized by positioning the cursor between two of the column headings. When the cursor changes to two horizontal bars, drag the cursor left or right to resize the column. The columns can be moved by dragging the column heading left or right beyond the adjacent column. When you release the cursor, the columns will be moved and resorted (based on the new column positions) from left to right.

The Stretch Height to Maximum button increases the vertical length of the window to its maximum height.

The Reset to Starting Height button resets the vertical length of the window to the height that it was originally displayed.

A.4.3 Menu and Option Descriptions

This section explains the menus and options of the pop-up menu. To display the pop-up menu, press the right mouse button or press <Ctrl-Tab>.

```
Report

Inverse order
Relist by index

Resize Columns to fit text
Resize Height to maximum
Resize Height to default

Focus remains with List
Toolbar              Ctrl+T

Goto Main Window    Ctrl+M
```

The "**Repor**t" option displays the report for the highlighted image in the Image Report window.

The "**Inverse order**" option reverses the order of the image entries as they are listed in the Image Listing window.

The "**Relist by index**" option redisplays the list by index number. The "Resize Columns to fit text" option resizes the columns on the window so that the text in every entry fits in its respective column.

The "**Reset Height to maximum**" option resizes the window to the height of the desktop.

The "**Reset Height to default**" option resets the height of the window to the default setting.

The "**Focus Remains With List**" option enables the list to act as an image browser by maintaining the input focus on the list even when an Image is opened.

The "**Toolbar**" option turns the toolbar on and off.

The "**Go To Main Window**" option returns control to the **V**_IST_**A** Imaging System V. 2.0 window.

A.5 Abstracts Window

A.5.1 Window Description
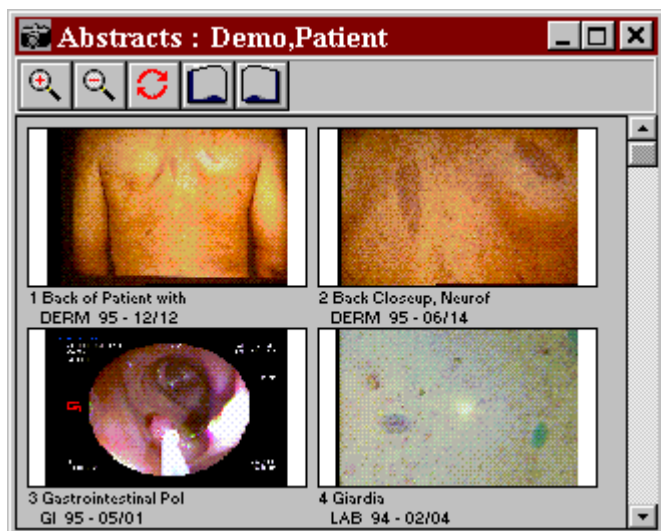
The Abstracts Window displays smaller thumbnail versions, or abstracts, of the available single images and image groups for a patient you selected in the **V***IST***A** Imaging System V. 2.0 Window. Click on an abstract of a single image to see a full-size version of the image. If the abstract image actually represents a group of images (label below image will have a green background), click on the image to see the Image Group window for that group. You can change the size of the abstracts (see below). You can also drag the sides of the window to change its shape.

To view abstracts located on the jukebox, you must select Display Juke Box Images in Options|User Preferences of the **V***IST***A** Imaging System V.2.0 window. Otherwise, the abstract will display the following:

If the system cannot connect to the Imaging System V. 2.0 server at your site, the system will display the following:

If an image from a PACS device has not been copied to the Imaging V. 2.0 server, the system will display the following:
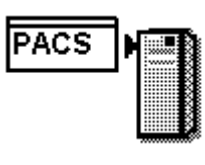
If an image group from a PACS device has not been copied to the Imaging V. 2.0 server, the system will display the following:

A.5.2 Button Descriptions

 The Increase Abstract Size button increases the size of the abstracts as Imaging V. 2.0 displays them on your screen.

 The Decrease Abstract Size button decreases the size of the abstracts as Imaging V. 2.0 displays them on your screen.

 The Refresh button redisplays the Abstracts window. Use this button when your screen does not display the abstracts properly.

 The Previous Page button shows the previous page of abstracts on the Abstracts window. Use this button when the abstracts are too big for all of them to display in the window at once.

 The Next Page button shows the next page of abstracts on the Abstracts window. Use this button when the abstracts are too big for all of them to display in the window at once.

A.5.3 Menu and Options Descriptions

To display this pop-up menu, click the right-mouse button on an abstract.
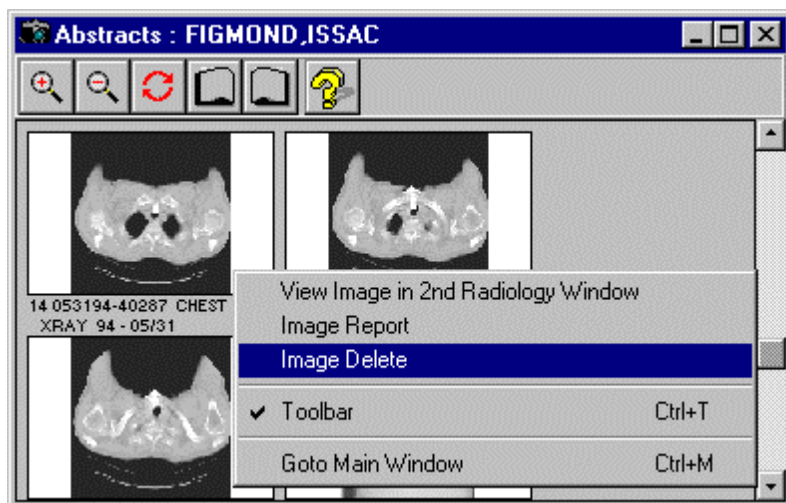
"**View Image in 2nd Radiology Window**" option will display the selected image in the 2nd or right radiology display window. This option will only be shown when the image is of type "X-ray".

"**Image Report**" option displays the Image Report window for the image you selected.

"**Image Delete**" option allows the user to delete the image from the patient record. Only users that have the proper security key will be able to delete images. When a user selects delete, the Image Delete Confirmation window will be displayed and the user will have to confirm the deletion.

"**Toolbar**" option reveals and hides the toolbar for the Abstracts window. The Abstracts toolbar is also able to be displayed on the Main Imaging System V. 2.0 window.

"**Go To Main Window**" option returns control to the **V**IST**A** Imaging System V. 2.0 window.

When you drag the scroll bar control, a description field will follow the control, displaying the image description and its number in the list. When you release the control, Imaging V. 2.0 will display the abstract of the selected image as the first visible abstract in the abstract window. You can use the keyboard arrow keys or Page Down and Page Up keys to change the position of the slider on the scroll bar, which will display different abstracts.

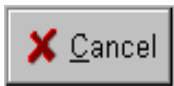## A.6 Patient Lookup Window

A.6.1 Window Description
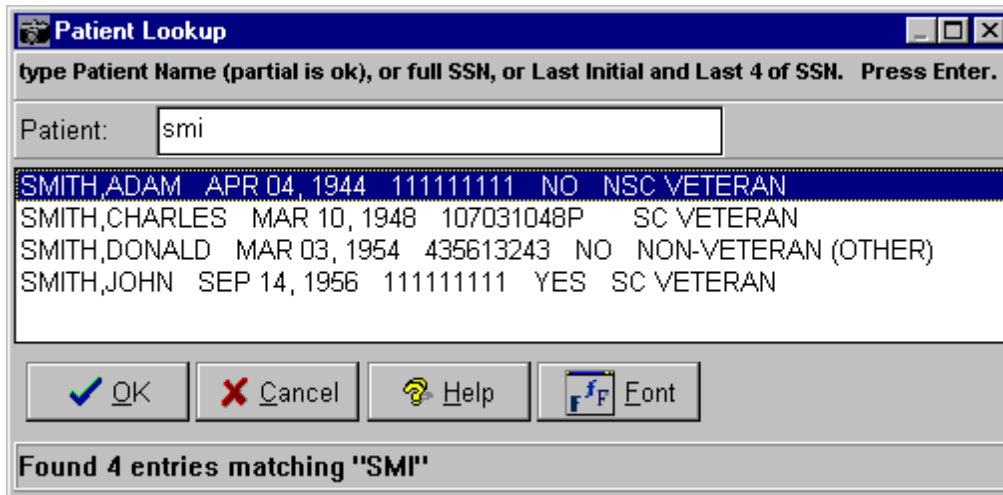
The Patient Lookup Window lists the patient names that conform to the string of characters that you enter in the "Patient:" input field of this window. You must enter at least three characters in the "Patient:" field. You can enter part of the patient's name, the full Social Security Number, or the patient's last initial and last four numbers of the patient's Social Security Number. Do not enter wildcard characters like asterisks or question marks. If Imaging V. 2.0 finds multiple patients that conform to the string of characters you entered, use your arrow keys or click the mouse pointer over the patient's name to select a patient.

A.6.2 Button Descriptions

 When you select the patient you want, press the OK button to close the window and see the Abstracts Window and the Image Listing Window for the patient you selected.

 Press the Cancel button to close the Patient Lookup window without selecting a patient.
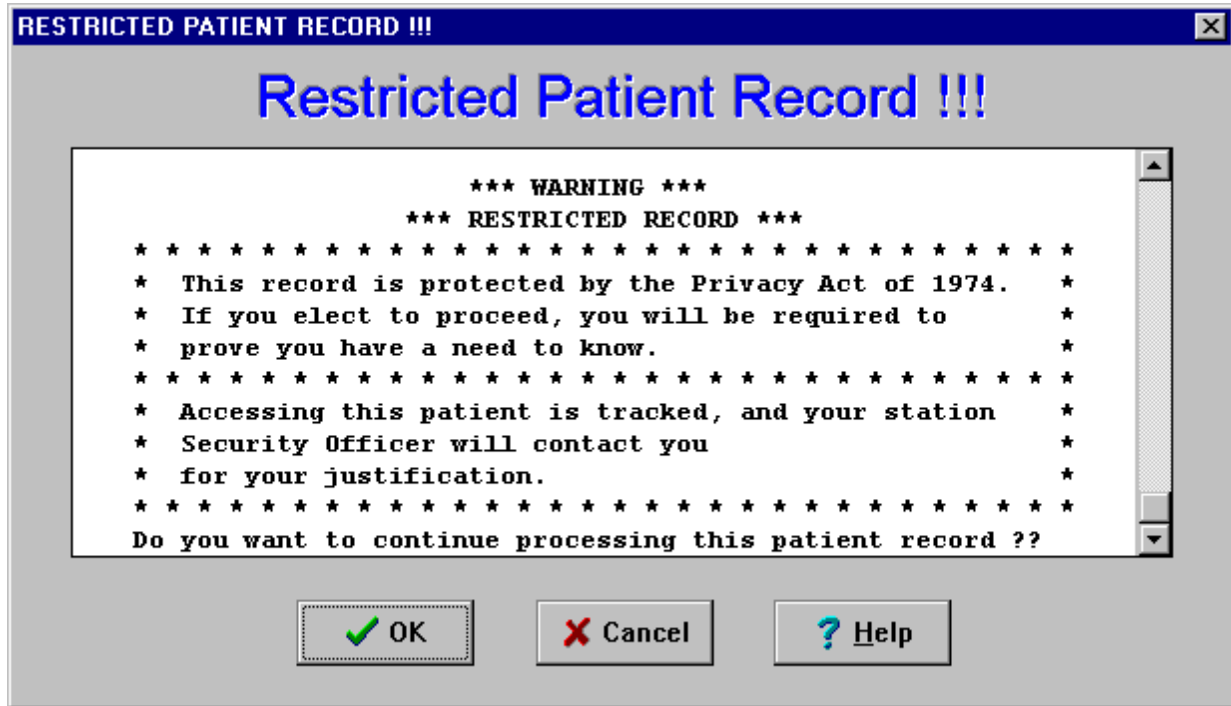
 Press the help button to view help about this window.
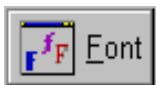
 Press the Font button to change the font that Imaging V. 2.0 uses to display the patient names in the Patient Lookup window.

A.7 Restricted Patient Record Window

Imaging V. 2.0 displays the Restricted Patient Record Window if you select a patient with a record that is restricted for viewing. If you select the OK button on this window, the Security Officer at your station will contact you and ask you for justification for accessing this record. Requests for restricted patient records are tracked by Imaging V. 2.0.

A.8 Image Group Window

A.8.1 Window Description
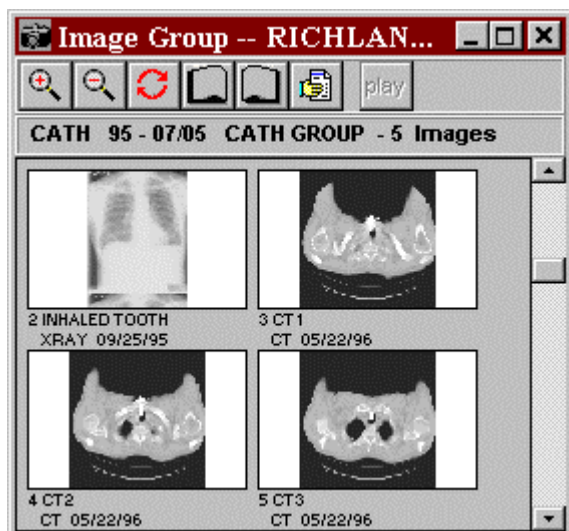
The Image Group Window displays abstracts of all images in the selected group from the Abstracts window or Image Listing window. The images in a group generally are related to a single procedure. The abstract image shown is taken from the first image in the group. Select one of the abstracts to see its associated image.

A.8.2 Button Descriptions

 The Increase Abstract Size button increases the size of the abstracts as Imaging V. 2.0 displays them on your screen.

 The Decrease Abstract Size button decreases the size of the abstracts as Imaging V. 2.0 displays them on your screen.

 The Refresh button redisplays the Abstracts window. Use this button when your screen does not display the abstracts properly.

 The Previous Page button shows the previous page of abstracts on the Abstracts window. Use this button when the abstracts are too big for all of them to display in the window at once.
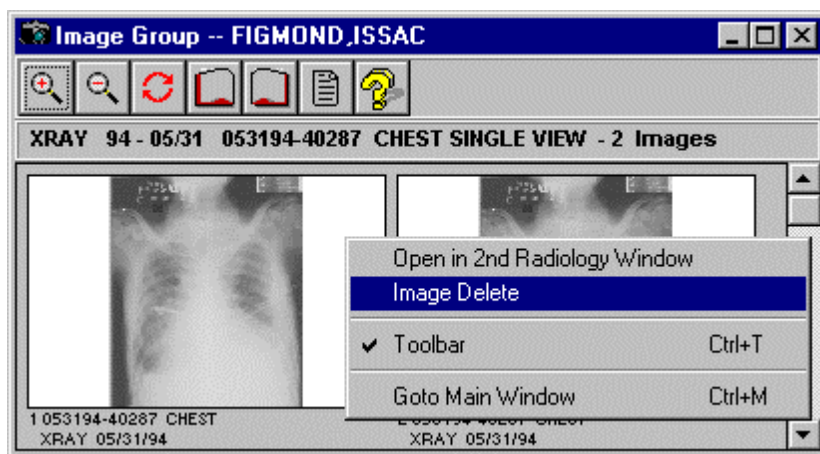
The Next Page button shows the next page of abstracts on the Abstracts window. Use this button when the abstracts are too big for all of them to display in the window at once.

Press the View Report button to display a report for the entire image group. The report describes the medical procedure or study for an associated image.

A.8.3 Menu and Option Descriptions

To display the pop-up menu, press the right mouse button or press <Ctrl-Tab>.

The "**Open in 2nd Radiology Window**" option will display the selected image in the 2nd or right radiology display window. This option will only be shown when the image is of type "X-ray".

"**Image Delete**" option allows the user to delete the image from the patient record. Only users that have the proper security key will be able to delete images. When the user selects "delete", the Image Delete Confirmation window will be displayed and the user will have to confirm the deletion.

The "**Toolbar**" option displays and turns the toolbar display on and off.

The "**Go To Main Window**" option returns control to the Main **V**IST**A** Imaging System V. 2.0 window.

A.9 Full Resolution View Window

A.9.1 Window Description

If the image you select from the Abstract window, Image Group window, or Image listing window is not a radiology image or a document, Imaging V. 2.0 will display the image in the Full Resolution View window.
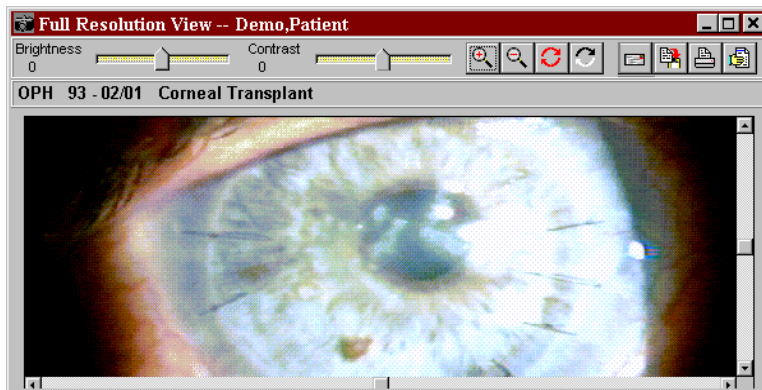
Use the Brightness and Contrast sliders to adjust the brightness and contrast of the image as it appears on your screen.

Note: Changing the brightness and contrast of the image as displayed does not affect the brightness and contrast of the actual recorded image.

A.9.2 Button Descriptions

 The Increase Size button increases the size of the image (zooms in) as Imaging V. 2.0 displays it on your screen.

 The Decrease Size button decreases the size of the image (zooms out) as Imaging V. 2.0 displays them on your screen.

 The Refresh button redisplays the Full Resolution View window. Use this button to reset the image size, contrast, and brightness to the original values.

 The Inverse button displays the image in reverse video, much like a photographic negative. Use this button to locate and identify features of the image that may not be apparent in the actual light and color scheme of the image.

The Send button will open a "Send Dialog Box" which will prompt you to enter the Internet address of a recipient or recipients, and send the selected image as an Internet electronic mail message, using a special Internet server called a POP Server. Send is not enabled in Imaging V. 2.0.

Use the Copy button to copy the image to the Windows clipboard.

Use the print button to print the image to a printer.

Press the View Report button to display the Image Report window for the entire image group.

A.9.3 Menu and Option Descriptions

This section explains the menus and options of the pop-up window. To display the pop-up window, press the right mouse button or press <Ctrl-Tab>.

Image Report
Invert Image
Reset Image
Goto Main Window Ctrl+M
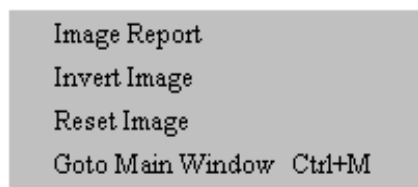
The "Image Report" option will display the Image Report window for the image you selected. The "Invert Image" option displays the image in reverse video. The "Reset Image" option resets the image. The "Go To Main Window" option will return control to the **V**IST**A** Imaging System V. 2.0 Display window.

A.10 Document Image Window

A.10.1 Window Description

If the image you select at the Abstract window, Image Group window, or Image listing window is a document, Imaging V. 2.0 will display the image in the Document Image Window. Documents may contain a drawing, text, or both.

To display the pop-up menu, press the right mouse button or press <Ctrl-Tab>.

The "Image Report" option will display the report associated with the document.

The "Go to Main Window" option will return you to the **V***IST***A** Imaging System V. 2.0 Display window.

A.10.2 Button Descriptions

 Use the Rotate 90 Degrees button to rotate the document 90, 180 or 270 degrees, respectively.

 Use the Zoom In On Rectangle button to select a rectangle within the document. Imaging V. 2.0 will enlarge the rectangle to fit in the display box of the window.

 Use the Pan Image With Mouse button to use the cursor to move the document within the display box.

Note: If the entire document is already displayed in the display box, the Pan Image With Mouse button will not work, because there is no document space to pan.

 Use the Scaling Factor button to increase or decrease the size of the document in the display box by percentages of the original size.

 The Fit In Window button resizes the document size so that it is as large as possible and still fits in the display box.

 The Fit To Width button resizes the document so that it is as large as possible and still fits the width of the display box.

 The Fit To Height button resizes the document so that it is as large as possible and still fits the height of the display box.

 The Print Document button will display the generic Windows print dialog window, allow you to declare a printer and printing formats, and print the document.

 The Help button will display help text for this window.

A.10.3 Menu and Option Descriptions

Image Report
Invert Image
Reset Image
Goto Main Window   Ctrl+M

To display the pop-up menu, press the right mouse button or press <Ctrl-Tab>. The "Image Report" option will display the report associated with the document. The "Go to Main Window" option will return you to the **V**_IST_**A** Imaging System V. 2.0 Display window.

A.11 Radiology Display Window

A.11.1 Window Description

Radiology images are generally part of a group of images. You will first see the Image Group Display Window. You may click on any of its abstracts to view the full resolution radiology image.

If the image you select at the Abstract window, Image Group window, or Image listing window is a radiology image, Imaging V. 2.0 will display the full resolution image in the Radiology Display Window. A number of buttons allow you to manipulate the appearance of the image.

If you have a dual monitor workstation or if you wish to compare two images side-by-side on a single monitor, you can use the left and right mouse buttons in the abstract view window to select which side will be used for an image. If you click on the image abstract with the left mouse button, the image will go to the left display window. If you click with the right mouse button, the image will go to the right display window.

You can use the mouse on the radiology image area to control the window and level (contrast and brightness) adjustment of the images. When the right mouse button is pressed, the window will change as the mouse is dragged up-and-down, and the level will change as the mouse is dragged back-and-forth. The mouse also controls panning magnification and automatic window/level adjustment when used in conjunction with the buttons.
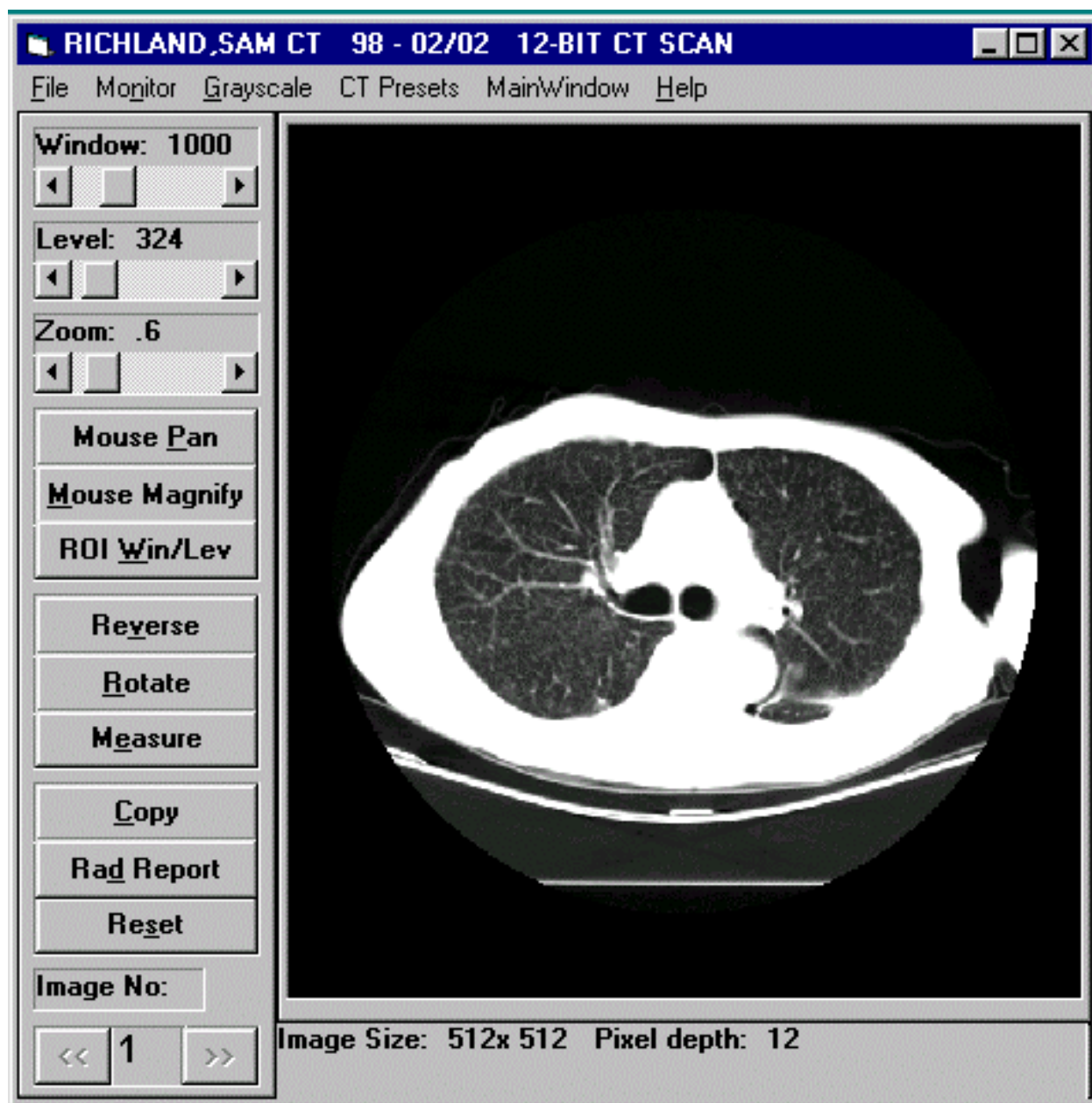
A.11.2 Button Descriptions
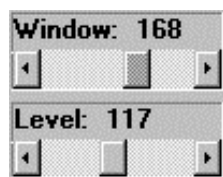
Window/Level Scrollbars: The window and level values may be changed by moving the scrollbars. Use your mouse to drag the scrollbar to a new position.

Zoom: .3
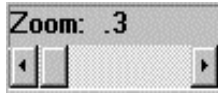
Zoom: The Zoom scrollbar may be used to select a zoom factor.

Mouse Pan

Pan: To pan the image, click on the "Mouse Pan" button. Then, use the mouse to place the arrow cursor over the area of the image to be panned. Press down on the left mouse button and drag across to the location on the image you would like to move the image to. Release the mouse button.

Mouse Magnify

Click on the Mouse Magnify button, then use your mouse pointer to click and drag a rectangle over an area of the image. Imaging V. 2.0 will magnify that area to fit the viewing window in the **V***IST***A** Radiology Window.

ROI Win/Lev

ROI Window/Level: Click on the ROI Window/Level button on the left button panel. Now, move the mouse to the upper right corner of the region of interest on the image and press the left mouse button down. Drag the mouse to the lower left corner of the Region of Interest. Release the mouse button. The window and level will be modified automatically so the selected Region of Interest will use the entire gray scale range.
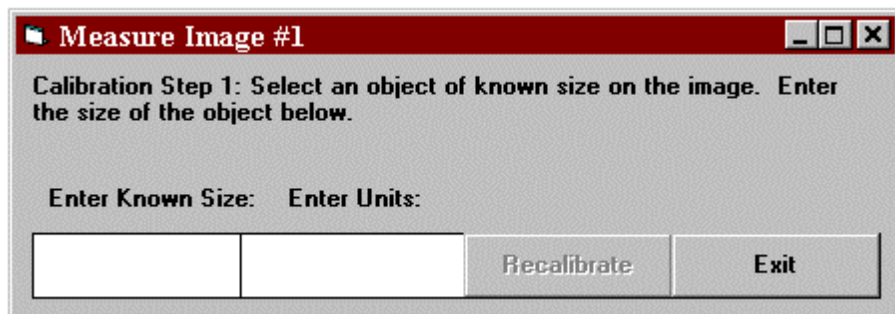
Reverse

Click on the Reverse button to display the image in reverse video, much like a photographic negative.
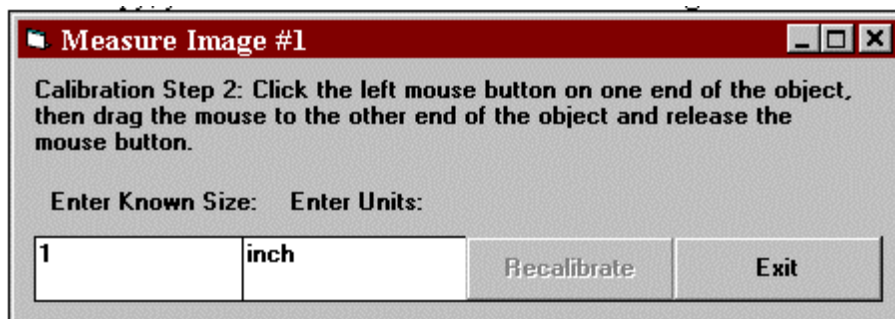
Rotate

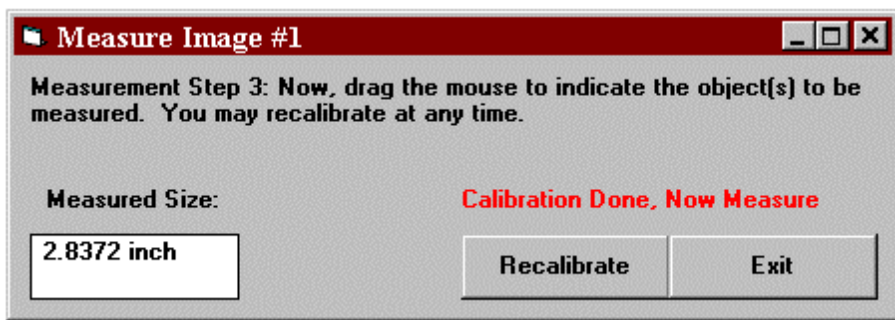Click on the Rotate CW button to rotate the image ninety degrees clockwise.
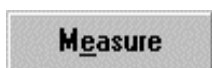
Measure

Click on the Measure button to measure the dimensions of the image. First, calibrate the measuring tool with an object of known size.

Measure Image #1

Calibration Step 1: Select an object of known size on the image. Enter the size of the object below.

Enter Known Size: Enter Units:

| | | Recalibrate | Exit |

Imaging V. 2.0 will prompt you for the known size of the object. The object chosen depends on the accuracy required.

Measure Image #1

Calibration Step 2: Click the left mouse button on one end of the object, then drag the mouse to the other end of the object and release the mouse button.

Enter Known Size: Enter Units:

| 1 | inch | Recalibrate | Exit |

Imaging V. 2.0 will prompt you to click on one side of the object, drag the cursor to the other side, and release the mouse button. This completes the calibration step.

Measure Image #1

Measurement Step 3: Now, drag the mouse to indicate the object(s) to be measured. You may recalibrate at any time.

Measured Size: Calibration Done, Now Measure

| 2.8372 inch | Recalibrate | Exit |

Measuring objects is done in a similar manner. Place the cursor over one end of the object to be measured, press the left mouse button and hold it down while moving the cursor to the other end of the object. Release the mouse button. The measurement will appear in the measurement window.
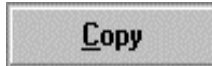
Copy Click the copy button to copy the image to the Windows clipboard.

Rad Report Rad Report: The report button may be clicked to display the short description and **V***IST***A** radiology report associated with this image.

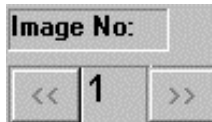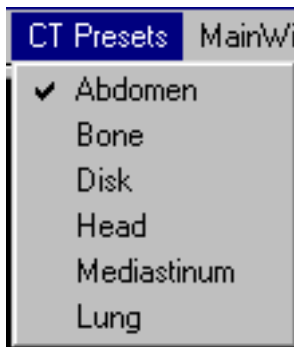**Reset** Click the Reset button to return to the original display settings.

Image No: **<<** 1 **>>** Image No. scroll buttons: Use the Image No. scroll buttons to display the next or previous image in a group. The display settings will be retained.

The CT Presets menu allows you to control how Imaging V. 2.0 displays computed tomographic images. Click the mouse on one of the pull-down menu choices (**Note: The CT Presets options will not be available for 8-bit images)**. The window and level settings will change so that the tissue indicated will be displayed optimally.

A.11.3 Menu and Option Descriptions
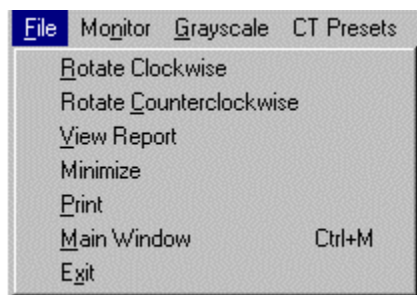
Under the File menu, you can rotate the image clockwise or counterclockwise, view the report associated with the image, minimize the Radiology Display window,

return to the **V**ISTA Imaging System V. 2.0 Display window (the "Main Window"), or exit the Radiology Display window. Choosing Exit from the File menu of the Radiology Display window does not close Imaging V. 2.0; it only closes the Radiology Display window.
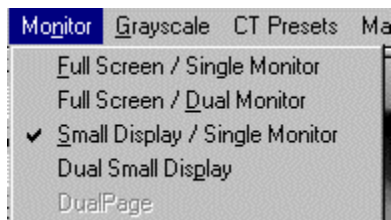

Under the Monitor menu, you can configure how Imaging V. 2.0 displays the Radiology Display window. "Full Screen/Single Monitor" enlarges a single Radiology Display window to the size of the desktop. "Full Screen/Dual Monitor" opens a second Radiology Display window and resizes each windows to the height of the desktop and to half of the width of the desktop. "Small Display/Single Monitor" resizes a single Radiology Display window so it occupies about a quarter of the screen.

"Dual Small Display" opens a second Radiology Display window and resizes both windows so they fill about half the screen area.
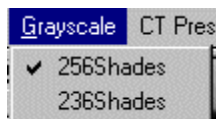
Under the Grayscale menu, you can declare how many shades of grey Imaging V. 2.0 uses to display images. If your workstation only displays 256 colors, select the "236 Shades" option at this menu. Because the Windows operating system uses sixteen colors to display objects on the desktop, you need to reserve a set of colors for the operating system.
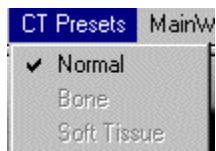

The CT Presets menu allows you to control how Imaging V. 2.0 displays computed tomographic images. Click the mouse on a choice and the window and level settings will change so that the tissue named will be displayed optimally.

The Main Window menu has one option, "Go To Main Window". This option will set focus to the **V***IST***A** Imaging System V. 2.0 window. This option does not close the Radiology Display window.
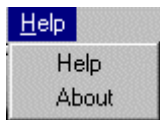
Click on the Help option to view the Help window. When "About" is clicked, a window displaying information about the Radiology Viewer will be displayed.

A.12 User Preferences Window

Select "User Preferences" under the Options Menu of the **V***IST***A** Imaging System V. 2.0 Window to see the User Preferences window.
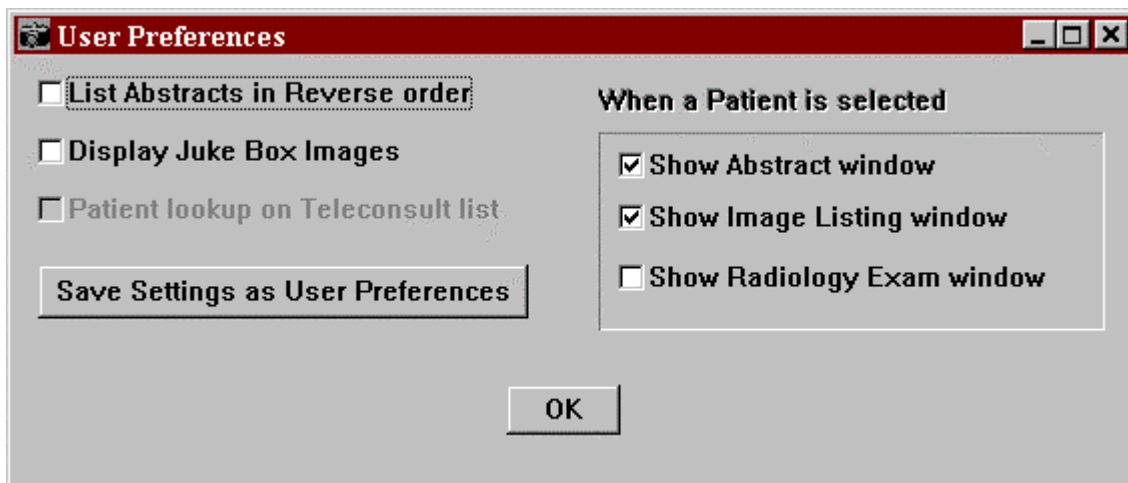
The List Abstracts in Reverse Order box lists the abstracts in reverse chronological order, based on the date of the procedure associated with the abstracts.

The "Display Juke Box Images" box allows abstract images from the jukebox to display in the Abstracts Window. This may be slow at some sites.

The "Patient lookup on Teleconsult list" box limits the patient searches in the **V***IST***A** Imaging System V. 2.0 Window to patients that have teleconsultations sent to your station from a remote site.

The "Show Abstract Window" box commands Imaging V. 2.0 to display the Abstracts window when you select a patient in the **V***IST***A** Imaging System V. 2.0 Window.

> **Note: If you check the Show Abstract Window box after you have selected a patient, Imaging V. 2.0 will not open the Abstract Window. Go to the V***IST***A Imaging System V. 2.0 Window, place the cursor to the right of the patient name, and press the Enter key. This will command Imaging V. 2.0 to search for the current patient and consult the user preferences again.**

The "Show Image Listing Window" box commands Imaging V. 2.0 to display the Image Listing window when you select a patient in the **V***IST***A** Imaging System V. 2.0 Window.

> **Note: If you check the Show Image Listing Window box after you have selected a patient, Imaging V. 2.0 will not open the Image Listing Window. Go to the V***IST***A Imaging System V. 2.0 Window, place the cursor to the right of the patient name, and press the Enter key. This will command Imaging V. 2.0 to search for the current patient and consult the user preferences again.**

The "Show Radiology Exam Window" box commands Imaging V. 2.0 to display the Image Listing window when you select a patient in the **V***IST***A** Imaging System V. 2.0 Window.

> **Note: If you check the Show Radiology Exam Window box after you have selected a patient, Imaging V. 2.0 will not open the Radiology Exam Window. Go to the V***IST***A Imaging System V. 2.0 Window, place the cursor to the right of the patient name, and press the Enter key. This will command Imaging V. 2.0 to search for the current patient and consult the user preferences again.**

A.13 Radiology Exam Listing Window

A.13.1 Window Description

Select Radiology Exams under the View menu option in the **V***IST***A** Imaging System V. 2.0 Window to see a separate Listing Window that lists the radiology exams for the patient you selected. You can set the widths of the columns on this window by selecting the column dividers and dragging them to the left or right. You can also modify the order in which the columns are displayed by selecting a column header with the mouse pointer and dragging the column divider to the left or right.

These two functions allow you to sort the exam listing by any column. Double-click the exam associated with the image or image group that you want to see.

Moving a new column to the far left results in resorting the list by that column. To display the pop-up menu, press the right mouse button or press <Ctrl-Tab>. There are alternate ways to select a an exam from the list.

Notes: If an exam has images associated with it, an "(I)" will be displayed after the exam status.

A.13.2 Button Descriptions

 Press the "View Image" button to display the image you selected.

 Press the "View Report" button to view the report associated with this exam.

 The "Reset Column Width" button resizes the columns in the window. The new size of each column will be wide enough to display the longest entry in the column. The columns can be resized by positioning the cursor between two of the column headings. When the cursor changes to two horizontal bars, drag the cursor left or right to resize the column. The columns can be moved by dragging the column heading left or right beyond the adjacent column. When you release the cursor, the columns will be moved and resorted from left to right.

 Use the "Stretch Height To Maximum" button to command Imaging V. 2.0 to expand the height of the Image Listing window to the bottom of the display.

⬆ Use the "Reset To Starting Height" button to reset the height of the Image Listing window to its default setting.

A.13.3 Menu and Option Descriptions

Report	
Inverse order	
Relist by index	
Resize Columns to fit text	
Resize Height to maximum	
Resize Height to default	
Focus remains with List	
Toolbar	Ctrl+T
Goto Main Window	Ctrl+M

This section explains the menus and options of the pop-up menu. To display the pop-up menu, press the right mouse button or press <Ctrl-Tab>.

The "**Repor**t" option displays the report for the highlighted image in the Image Report window.

The "**Inverse order**" option reverses the order of the image entries as they are listed in the Image Listing window.

The "**Relist by index**" option redisplays the list by the index number in the left-hand column.

The "**Resize Columns to fit text**" option resizes the columns on the window so that the text in every entry fits in its respective column.

The "**Reset Height to maximum**" option resizes the window to the height of the desktop.

The "**Reset Height to default**" option resets the height of the window to the default setting.

The "**Focus Remains With List**" option enables the list to act as an image browser by maintaining the input focus on the list even when an Image is opened.

The "**Toolbar**" option turns the toolbar on and off. The "**Go To Main Window**" option returns control to the **V***IST***A** Imaging System V. 2.0 window.

A.14 V*IST*A Reports Window

A.14.1 Window Description

In the Reports Menu of the V*IST*A Imaging System V. 2.0 window, there are multiple reports you can select. Every report is displayed in the same window. The "Patient Profile" option will bring up the Patient Profile tab of the V*IST*A Reports Window. The "Health Summary" option will bring up the Health Summary tab of the V*IST*A Reports Window.
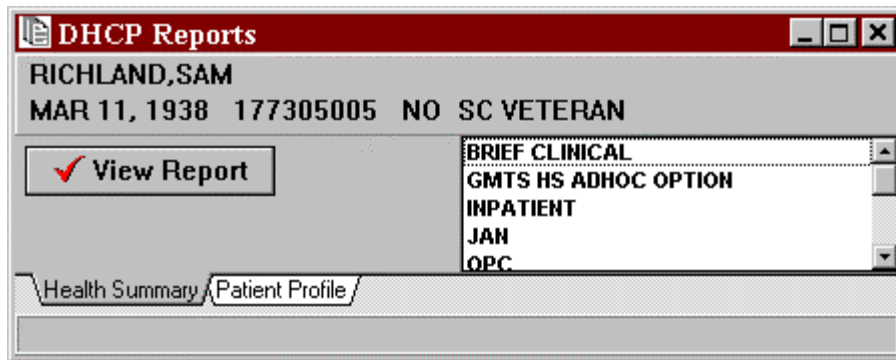
Click the tabs at the bottom of the window to see different categories of reports.

To View a Health Summary, you must first select a Health Summary type from the pull-down list at the right of the window. Customized Health Summaries may be set up using your hospital V*IST*A system.
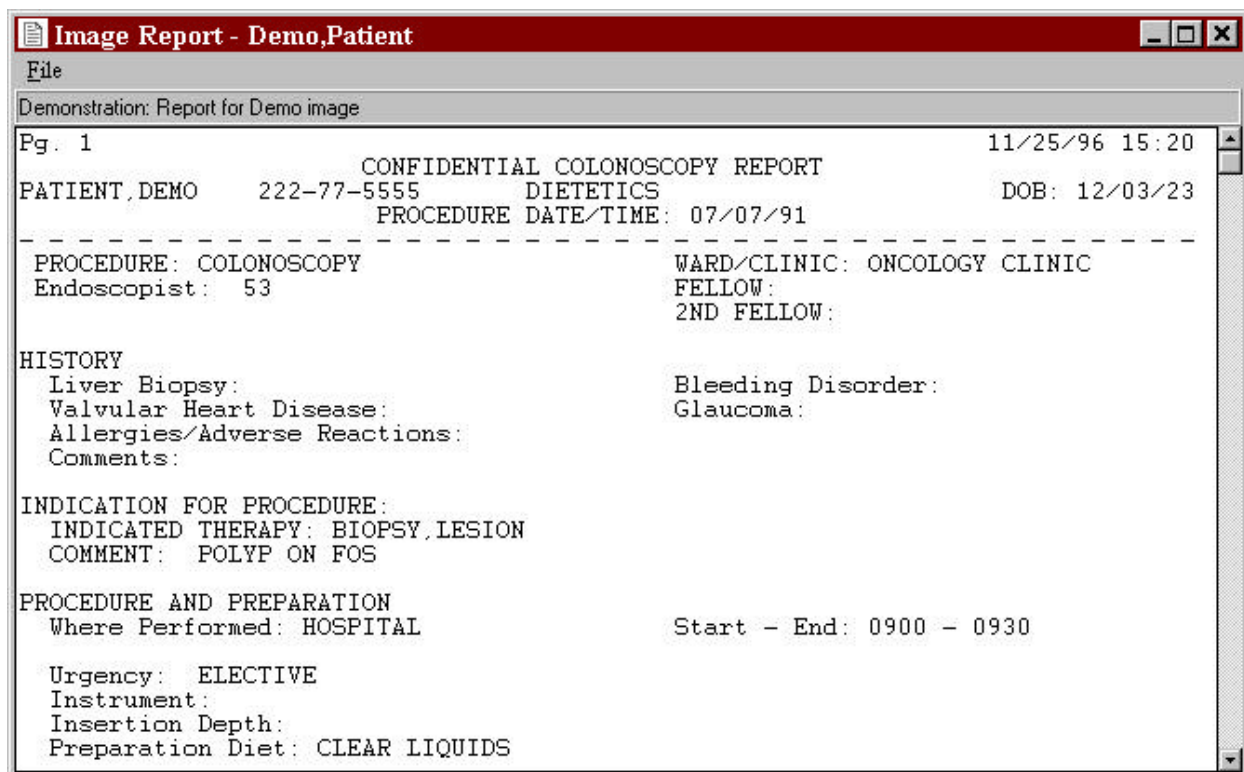
A.14.2 Button Descriptions

 Click the View Report button to view the report you selected.

A.15 Image Report Window

A.15.1 Window Description

The View Report button is located on the Full Resolution View Window, the Radiology Display Window, the Document Window, the Group View Window and listing windows. Clicking on this button will cause a report to be displayed in the Image Report Window. This report will contain the long description for the image, if there was one entered, and the report for the medicine, surgery, radiology, or laboratory procedure that the image is associated with.

A.15.2 Menu and Option Descriptions

The Image Report Window contains a menu option called **"File"**. If you select File with your mouse or keyboard, you will see options for Font, Print, and Print Setup.

Click on the **"Print"** option to begin spooling and printing to a network or local printer.

Use the **"Font"** Option to select a different font to make the report window display or printout more readable. You will then be able to select the font, style, point size, effects, color, and script. Select OK in the Print window. Imaging will print the report on the output device that you selected.

If you need to change the printer setup, you can do this by clicking on the **"Print Setup"** option. This option opens the standard Windows Print Setup window (**Warning: This is not recommended for novices**). Be sure to change this back to the default printer when you are done printing so the next user will not inadvertently print data to the wrong device.

The **"Exit"** Option will close the Image Report window.

A.16 Patient Profile Window

A.16.1 Window Description

Select a patient in the **V***IST***A** Imaging System V. 2.0 window. Select Reports|Patient Profile and press the View Profile button to see the "patient profile" for the patient you selected.

```
📄 RICHLAND,SAM Patient Profile                              _ ☐ ✕
 File
MAR 11,1938  177305005  NO SC VETERAN                              ▲
                                                                   ▲
RICHLAND,SAM                      177-30-5005           MAR 11,1938
===================================================================
Address: STREET ADDRESS UNKNOWN        Temporary: NO TEMPORARY ADDRESS
         UNK. CITY/STATE
 County: UNSPECIFIED                     From/To: NOT APPLICABLE
  Phone: UNSPECIFIED                       Phone: NOT APPLICABLE
 Office: UNSPECIFIED

Primary Eligibility: CHAMPVA (NOT VERIFIED)
Other Eligibilities:



Status       : ACTIVE INPATIENT-on WARD

Admitted     : APR 21,1985@17:00        Transferred    : APR 21,1985@17:00
Ward         :                          Room-Bed       :
Provider     :                          Specialty      :
Attending    :

Admission LOS: 25  Absence days: 1  Pass Days: 0  ASIH days: 0

Currently enrolled in GENERAL MEDICINE (VAX TEST),
                      RADIOLOGY CLINIC,

Future Appointments: NONE                                          ▼
```

The top of the report lists the patient's name, the patient's Social Security number, and the patient's birth date. The report will also list the permanent and temporary addresses of the patient, the eligibilities of the patient for VA care, status information, admission and transfer data, future treatment appointments, and remarks about the patient and their care.
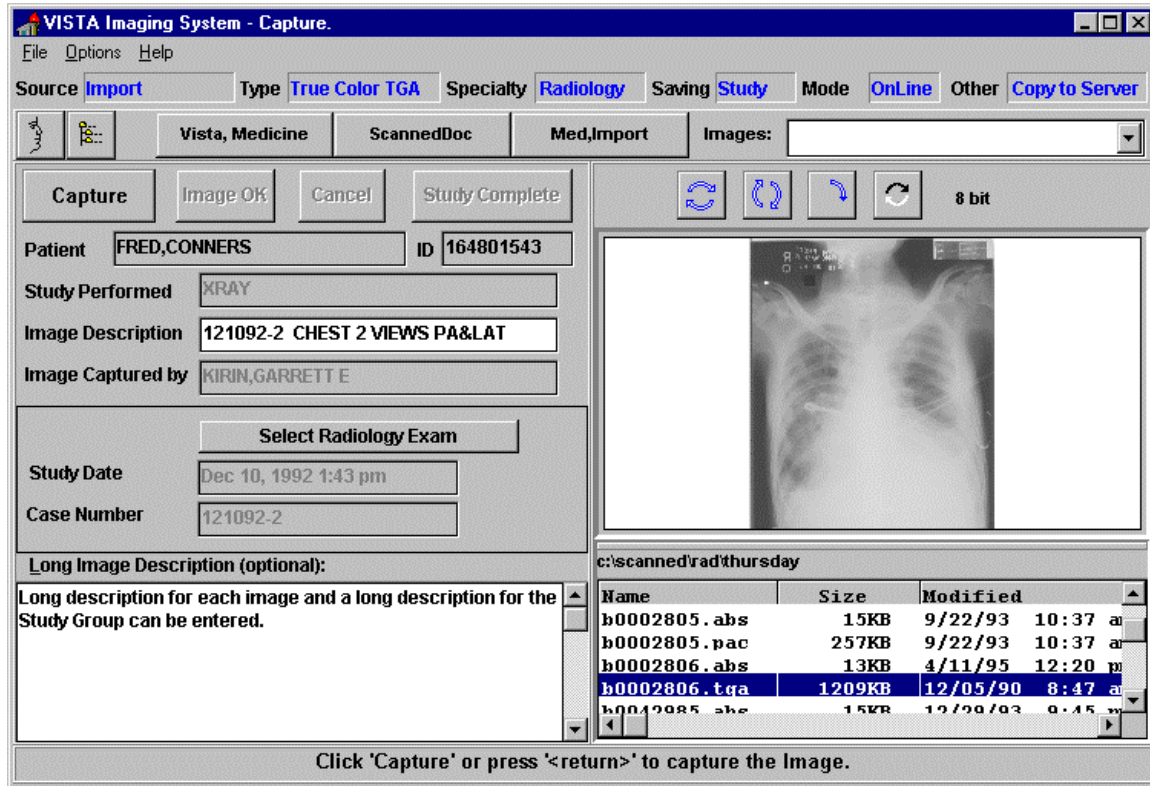
A.17 Video Player Window

VISTA Imaging V. 2.0 can display .AIV files in the video player window. It does not include capture capabilities for .AVI files.

A.18 V*IST*A Imaging System V. 2.0 Capture Window

A.18.1 Window Description

This is the Main Capture Window for Imaging V. 2.0. From this window, other windows will be opened during the capture process for you to select, confirm, or edit the information required to capture an image to the patient record.
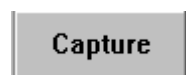
A.18.2 Capture Window Button Descriptions

The Patient Lookup button opens a window that allows the user to select a patient for image capture.

The Import Directory Selection button opens the window for the selection of the directory from which images will be imported.

Capture The Capture button starts the image capture process. It may open a frame grab window, start a scanner running, or initiate the import process.

Image OK The Image OK button starts the process of saving the image to the patient's record. Click this button to accept the image.
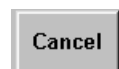
Cancel The Cancel button should be used when the captured image is not the correct view or is not of good quality. You may then recapture the image.

Study Complete The Study Complete button is used to indicate that all images have been captured for this procedure.

The Horizontal Flip button causes the image displayed in the capture window to be flipped so the right side is shown on the left and vice versa. The stored image will retain the flip.

The Rotate button causes the image to be rotated 90 degrees in the clockwise direction. The stored image will retain the rotation.

The Vertical Flip button causes the image displayed in the capture window to be flipped so the top is shown at the bottom and vice versa. The stored image will retain the flip.

The Reverse button causes the image to be displayed with reversed colors. If the image is black and white, then black will be shown as white and vice versa. The reverse process is not recommended for color images.

Select Radiology Exam The Procedure Selection button is used to select the patient's **V**IST**A** procedure or exam (medical, surgical, laboratory, or radiology) with which this image is to be associated. The label on this button will vary depending on the package selected under Configuration.
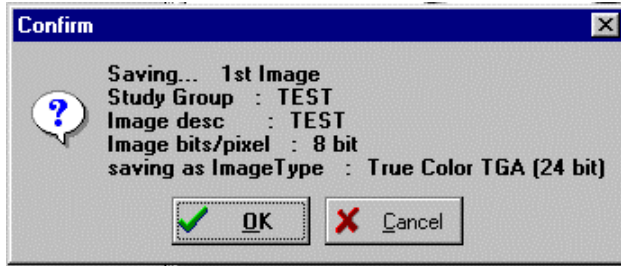
The Image Save Confirmation window is displayed after the Image OK button has been clicked. This window shows information about the image being saved and its format. The user is prompted to verify that this information is correct. Otherwise, pressing the cancel button will allow the user to change the configuration before saving.

A.18.3 Capture Window Menu options

This section explains the menus and options on the **V***IST***A** Imaging System - Capture Window.
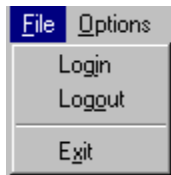
Under the "File" menu, you can login or logout of **V***IST***A**, or exit.
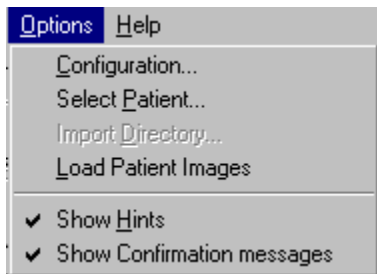

Under the "Options" menu, select the "Configuration" option to open the Configuration window. Use the "Select Patient" option to open the Patient Lookup window. Select the "Import Directory" option to open the Import Directory selection window and select the directory where you want to import images from. Use the "Load Patient Images" option to load the patient image descriptions into the

"images" drop-down list box on the main capture window. You can also reveal or hide the hints and confirmation messages using this menu.

Under the "Help" menu, select "Contents" to see the main help page for Imaging V. 2.0. Select "About" to display an Imaging V. 2.0 window with version information. Select "What's New" to read the What's New section of Imaging V. 2.0 help. The Imaging Capture Window will display help for this window.

A.19 Capture Configuration Window
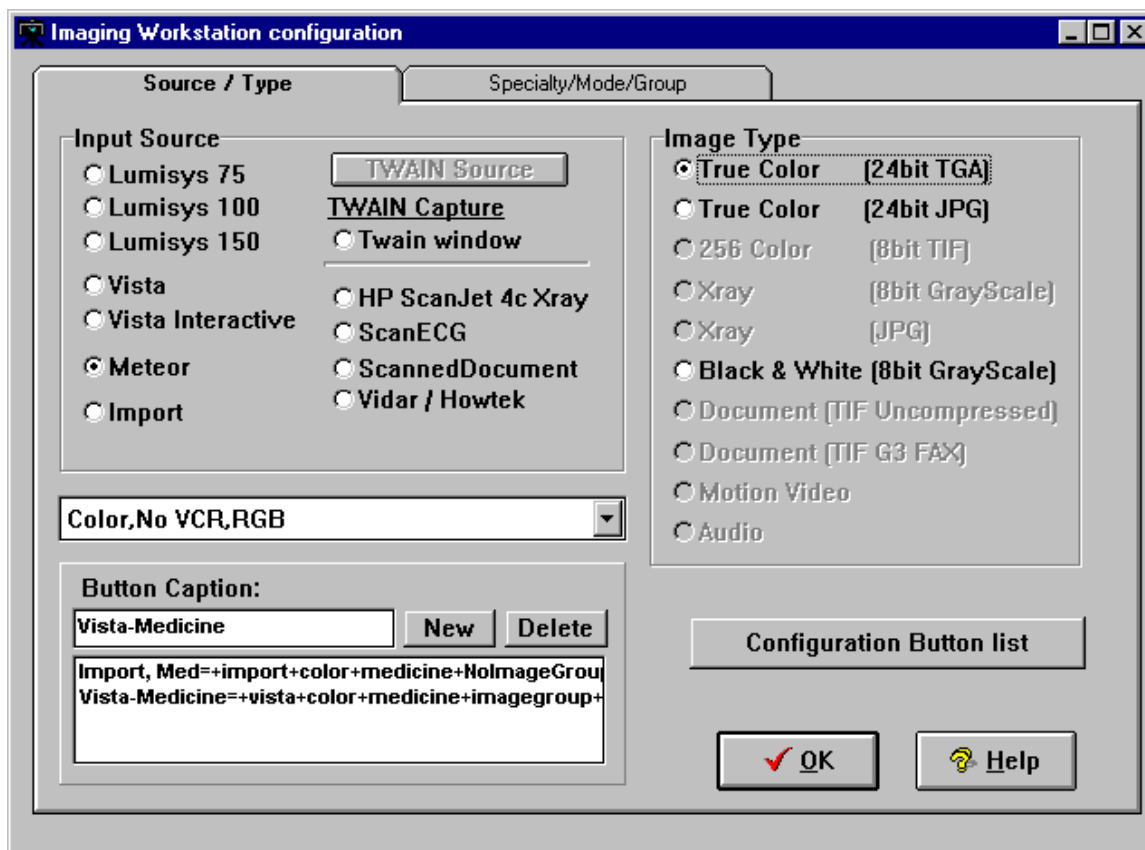
The Source/Type Tab of the Imaging Workstation Configuration window allows the user to define the input source for an image capture and the type of image file to be saved.
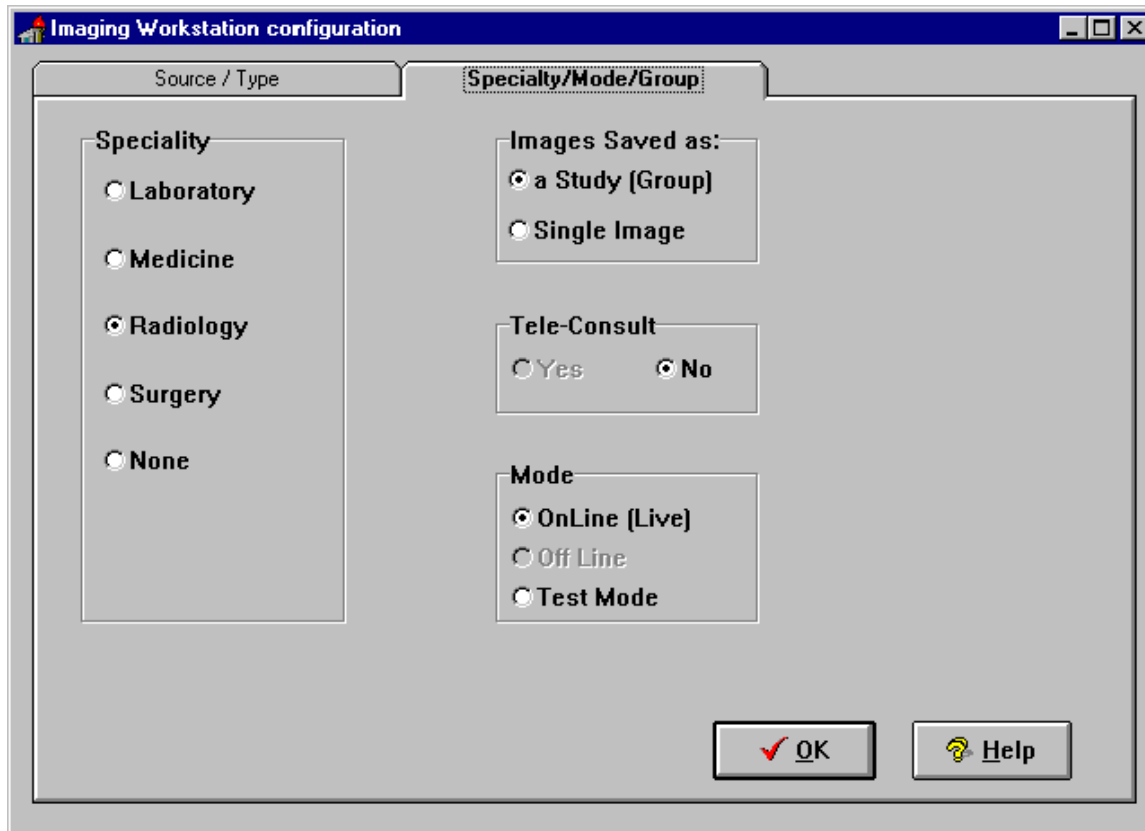
The Specialty/Mode/Group Tab of the Imaging Workstation Configuration window allows the user to...

- Select the specialty **V**_IST_**A** package for which the captured images are to be associated.

- Define whether the images will be saved as a group or singly.

- Indicate that the workstation is to save images Online (to the network) or to be used for testing.

A.20 ATVISTA Frame Grab Capture Window
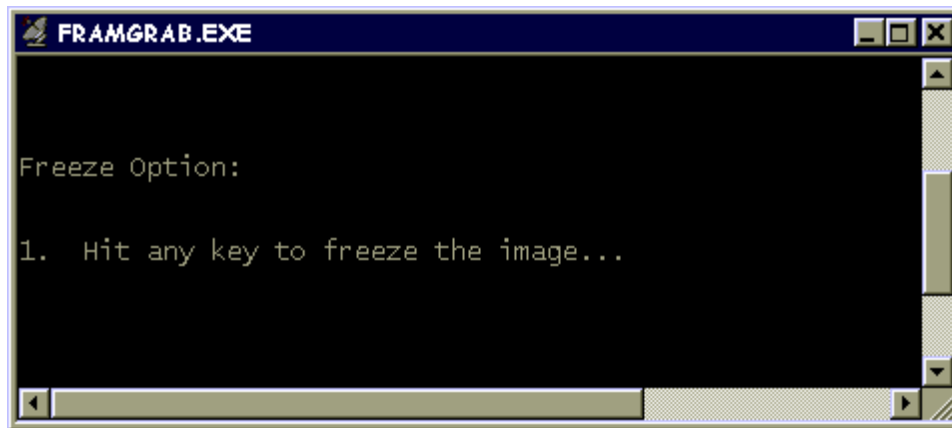
If you are in interactive ATVISTA capture mode, you will see the window illustrated above after clicking on the Capture button of the Capture Window. You will also see a live image on the second workstation monitor. Hit any key to freeze the image.
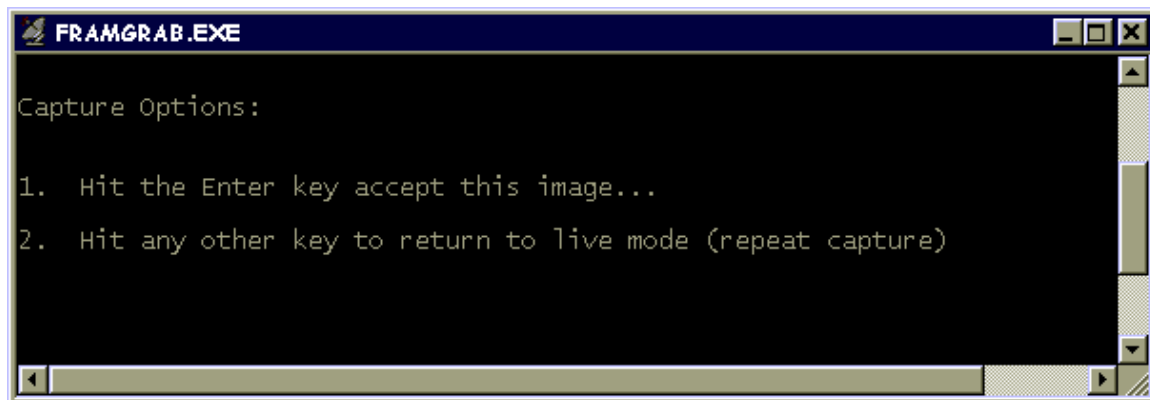
After capturing the image, you will see the window illustrated above. Hit the enter key to accept the image. Hit any other key to recapture.

A.21 Meteor Capture Window

A.21.1 Window Description

When the workstation is configured for Meteor capture, the window illustrated below will open when the Capture button is clicked.
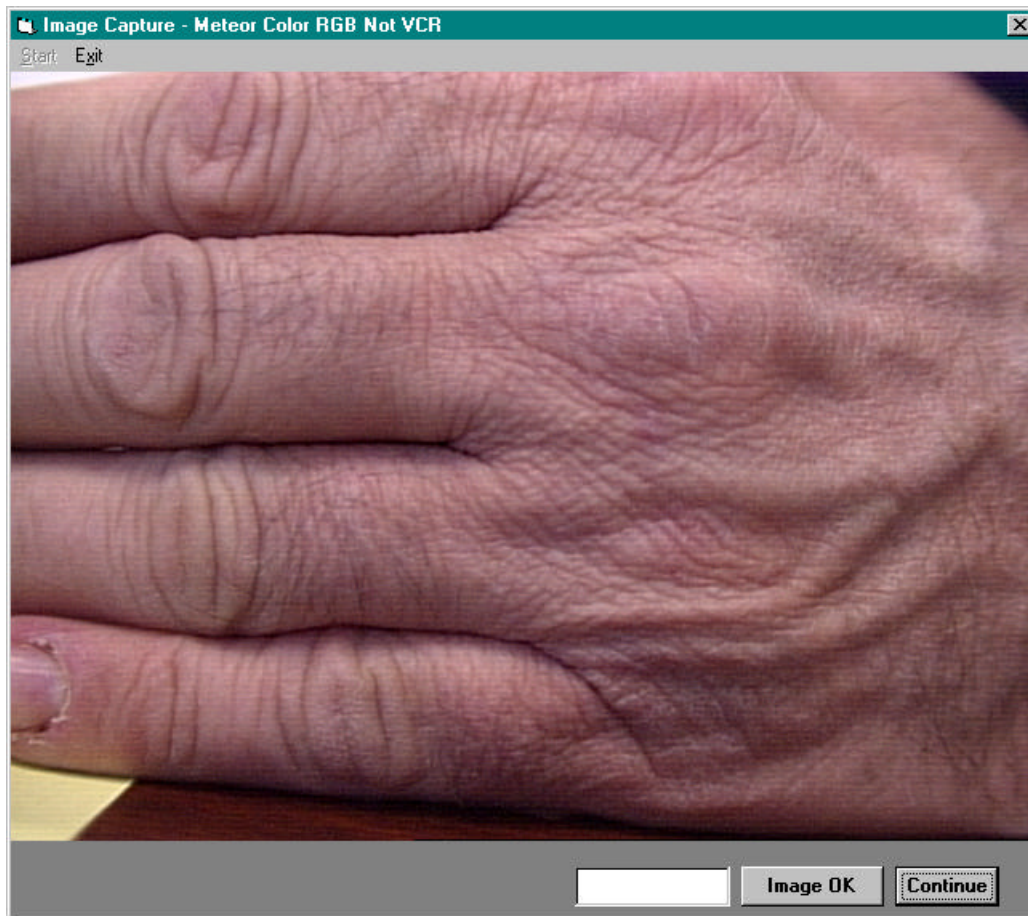
A.21.2 Button Descriptions

Freeze The Freeze button stops the motion in the Meteor Image Box and presents the still image to be saved.

Image OK The Image OK button should be clicked when the image shown in the Meteor Image Box is acceptable.

Continue If the image shown in the Meteor Image Box is not acceptable, click on the Continue button to start the full motion picture again so you can repeat the capture.

Glossary

Annotation	The ability to attach notes to images.
Architecture	The design of the components of a computer, network, or software system.
Archive	The long term storage of data or images.
Audit trail	Record of activity on a particular file or computer.
Background processing	Simultaneous running of a "job" on a computer while working on another job. Examples would be printing one document while working on another, or the software may do automatic saves while you are working on something else.
BLOB	Stands for Binary Large Object and refers to the non-textual elements of a mail message.
Brightness	The balance of light and dark shades in an image.
Composite video	TV signal which sends all colors, and vertical and horizontal signals together.
Contrast	Range between the lightest and darkest tones in an image.
Density	The degree of darkness in an image.
DHCP	Decentralized Hospital Computer Program the earlier name of the VA's hospital information system, now called **V**_IST_**A**.
DICOM	Digital Imaging and Communications in Medicine. A medical imaging standard, DICOM is standard for Radiology equipment and is being adopted by the other members of the medical imaging community.
Digital camera	A camera that transforms a picture into a system of numbers. The picture can then be manipulated pixel (dot) by pixel, and stored and transmitted in the manner as textual data.
File	All the data that describes a document or image.

File protection   Techniques for preventing files from being erased.

File server   A machine where shared software is stored.

Frame grabber   A device that changes a video picture into a digital computer language.

Gray scale   The range of shades of black in an image. The more shades recognized by the device, the clearer and sharper the image will be.

High resolution   Refers to a better quality of display over the original achieved by increasing the number of pixels (dots) per inch.

Hot spot   The single pixel that is activated by selection using a mouse, light pen, or other means.

Image   The computerized representation of a picture, or graphic.

Image abstract   A "thumbnail" version of an image, which requires less computer processing resources to display than the actual image.

Image group   A group of images associated with a medical examination.

Image processing   The translation of an image into a digital computer language so that it may be manipulated in size, color, clarity, or to enhance portions of it.

Image resolution   The fineness or coarseness of an image.

Imaging system   Collection of units that work together to capture and recreate images.

Jitter   The flickering of a displayed image.

Jukebox   A device that holds multiple optical discs and can swap them in and out of the drive as needed.

Login (Logon)   Procedure for gaining access to the system or program.

Mouse   Hand driven input and pointing device.

Multimedia   Combining more than one media for the
                     dissemination of information (i.e., text, graphics, full
                     video motion, audio).

On-line   Something that is available for access on the system.

Optical disc   A direct access storage device that is written to and
                     read by laser light. Optical discs have greater storage
                     capacity than magnetic media. Many optical discs
                     are Write Once Read Many (WORM).

Pan   To view different parts of the image that extend
                     beyond the borders of the screen.

Pixel   The individual dots that define a picture.

Resolution   Measure of output quality (dpi—dots per inch) or
                     halftone quality (lpi—lines per inch).

Retrieval   The ability to search for, select, and display a
                     document or image from storage.

RGB   Red, Green, Blue. The colors used in varying
                     combinations and intensities on monitors, TV screens,
                     etc.

Scaling   Uniformly changing the size of an image.

Scanner   A device that converts a hardcopy image into
                     machine-readable code.

Server   A computer which is dedicated to one task.

Storage media   The physical device onto which data is recorded.

TWAIN   An interface standard for scanners, cameras and
                     other input devices.

User preferences   The preferences that each user sets in the User
                     Preferences window that control the circumstances
                     and ways in which the Imaging package displays
                     images.

Video camera   Camera which records full motion video.

Video digitizer   A device that changes a video picture into a digital

	computer language.
V_IST_**A**	<u>V</u>eterans Health <u>I</u>nformation <u>S</u>ystem <u>T</u>echnology <u>A</u>rchitecture. **V**_IST_**A** replaces DHCP.
Workstation	A computer which is dedicated to a single type of task.
Write Once Read Many (WORM)	Once written to the disc, data is only available for reading and cannot be altered.
WYSIWYG	"What you see is what you get." The feature of seeing images and text exactly as they will look when printed or transmitted.
Zoom	To enlarge an image or a portion of an image.

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